

2701

EDP

JPRS: 2701

23 May 1960

MAIN FILE

NEW TECHNIQUES, ORGANIZATION AND
EMULATION PROGRAMS INCREASE
COMMUNIST CHINA'S COAL OUTPUT

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

20000105 120

Photocopies of this report may be purchased from:
PHOTODUPLICATION SERVICE
LIBRARY OF CONGRESS
WASHINGTON 25, D.C.

U.S. JOINT PUBLICATIONS RESEARCH SERVICE
205 EAST 42nd STREET, SUITE 300
NEW YORK 17, N. Y.

JPRS: 2701

CSO: 3566-N

NEW TECHNIQUES, ORGANIZATION AND
EMULATION PROGRAMS INCREASE
COMMUNIST CHINA'S COAL OUTPUT

[The following are extracts and translations of articles and dispatches appearing in the Mei-t'an Kung-yeh (Coal Industry), Nos 18, 23, 24, 25, 26, 27, 28, 29, Peiping, August, October, and November, and December 1959, and Mei-kuang Chi-shu (Coal Mining Techniques), Nos 21, 28-29, November-December 1959.]

TABLE OF CONTENTS

| <u>Article</u> | <u>Page</u> |
|---|-------------|
| Competition Between Mine and Transport [Workers] Achieve Noted Results | 1 |
| The Broad Striding Shansi Coal Industry | 9 |
| High Production Emulation Must Be Deeper, Broader, and More Enduring | 15 — |
| Three Days Without Production, Car Loading Continues; Three Days Without Cars, Production As Usual | 17 |
| Experiences in Enlarging Coal Bins, Increasing Storage Capacity, Reducing Carloading Time, and Improving Coal Quality | 20 |
| The Great Revolution of Production Organization in Coal Mining Enterprises | 30 |

Table of Contents continued--

| | |
|---|-----|
| How T'ang-chia-chuang (Coal Mine Adopted the "Four Eight-hour-shift" Overlapping Operation | 35 |
| Hydraulic Mining District of Hua-chia-kang Mine Victoriously Enters 1960; Hydraulic Coal Mining Demonstrates Great Power | 43 |
| Demonstrate the Spirit of Cooperation; Guarantee A Still Greater Leap Forward | 45 |
| Joint Proposal By the Advanced Group Representatives of China's Railway, Communications, Metallurgical and Coal Mine Systems for Further Strengthening Great Socialist Cooperation | 49 |
| Fourteen Rail-Station-and-Mine Units Gloriously Acquire Red Banners For Cooperation | 53 |
| Great Viability of Small-Scale Coal Mines | 57 |
| Continued High Speed Development of the Coal In- dustry Through Vigorous Implementation of the "Four Comparison" Red Banner Emulation Movement Centering Upon "Five Improvements" | 64 |
| Advanced Experience of Small Scale Mines in 60 Items of 15 Categories | 75 |
| Chin-peí Special District Carries on Extensive Petroleum Extraction From Coal | 99 |
| Carry Out Large-scale High Quota Abundant Production | 104 |
| Great Accomplishments in Coal Industry Techniques . | 108 |
| Honorary List | 116 |
| Preliminary Analysis on the Promotion of the Four-Shift Overlapping Operation in Retreat Working Faces | 125 |

COMPETITION BETWEEN MINE AND
TRANSPORT [WORKERS] ACHIEVE
NOTED RESULTS

[The following is a full translation of an unsigned article appearing in Mei-t'an Kung-yeh, (Coal Industry), No 18, Peiping, 30 August 1959, pages 6,7.]

(Magazine's dispatch) Ever since the on-the-spot conference for rail-mine cooperation was held by Fou-hsin [Fushin Coal Mines], over-all leap forward red banner emulation movements for "high quality, high output, more shipments and fast shipments" coal production, and transport have been vigorously implemented and carried out by the staff and workers of China's railways and coal mines. Important results have been achieved. Transport capacity saved from reducing operating time, increasing net loads, and dispatching more through trains alone was enough to ship out 1,600,000 more metric tons of coal.

In order that coal production and transport might achieve an even greater leap forward, a telephone conference was jointly called on 14 August 1959 by the Ministry of Railways, the Ministry of Coal Industry, the National Committee of China's Railway Workers' Union and the National Committee of China's Coal Mine Workers' Union.

During the conference, important results and lessons learned from experience obtained in the second quarter during the promotion of Fou-hsin's experience of rail-mine cooperation by all railways and mines in China were summarized. Results of "high quality, high output, more shipments and fast shipments" red banner competition jointly implemented and carried out by all railways and coal mines in China were also announced. The advanced units were rewarded or granted special mention.

YU Kuang-sheng, Vice Minister of the Ministry of Railways, made a summary report during the conference on behalf of the four participating units. In his report, he pointed out that comparing results would not only summarize experiences and further strengthen cooperation between rail-

ways and mines, but, and even more important, by making comparisons, rightist deviation sentiments would be conquered and production might increase. In addition, economy movements might push socialist competition of railway and mine cooperation toward a new high tide, and complete and over-fulfill coal production and transport tasks for 1959.

Vice Minister YU declared that because of the promotion of Fou-hsin's experience in railway and mine cooperation by various units, as many as 18 coal mines and railway stations in China have united their transport organizations and greatly improved their cooperative relationship in coal mine carloading stations. They have mutually supported each other and jointly conquered difficulties. Thus, a joint leap forward has been fostered. As a result, he continued, coal transport volume for the second quarter increased by 12.7 percent over that of the first quarter.

Based on statistics of 19 major coal mine carloading stations, the operating time of freight cars on an average single trip during the second quarter was 9.11 hours, a reduction of 0.61 hours compared to the first quarter. This is equivalent to the saving of more than 19,000 cars used. The [average] net coal load [per car] for all China during the second quarter reached 42.6 metric tons, an increase of 0.7 tons compared to the first quarter. Because of this increase in net loads, over 806,000 tons more coal was shipped.

The amount of coal transported in China on through trains accounted for 42.7 percent of the total amount of coal transported. This was an increase of 11.2 percent over the first quarter. More than 680,000 car-hours were saved, which was equivalent to a saving of 28,500 operating cars.

On the foundation of a unified ideology, the spirit of each coal mine and rail station toward technical renovation and technical revolution was very strong. For example, 58 sliding slope coal storage bins were completed and turned over for operation during the second quarter. These have a total coal storage capacity of 150,000 metric tons.

It was pointed out by Vice Minister YU that, while very good results were achieved by various coal mine carloading stations in China during the red banner emulation movement,

there was still a definite distance to travel toward the fulfillment of targets recommended by the Fou-hsin on-the-spot conference.

The railway bureaus and coal mining administrations must continue to build up their efforts under the leadership of the various levels of Party committees. They must delve into coal mine and railway station operations and improve transport organization. They have to continue the thorough practice of Fou-hsin's experience, and carry out the "railway and mine one family" ideology.

They must further implement red banner competitions between rail station-mine units within provinces (regions) and between workshops, shifts and groups, and individuals within each rail station-mine unit. They must continue the intensive mobilization of masses, and carry out large-scale renovation and revolution of techniques. They must build large numbers of sliding slope coal storage bins, drastically cut operating time, reduce as much as possible the dispatching into mines of cars with low sides, and eliminate empty corners in loaded coal cars in order to raise net loads.

To ease the tense transport situation during the fourth quarter, early shipment must be planned and maximum effort made to load and ship all stockpiles of coal during the third quarter.

Vice Minister Yu further called upon the entire staff and workers of railways and mines to raise high the banners of railway-and-mine cooperation. He urged them to increase their efforts following the victories achieved during the second quarter. He inspired them to advance on the heels of victory, and to strive for a contribution to the great tenth anniversary of China's national holiday and to strive to carry out the proposed targets of the third quarter.

LIU Hsiang-san, Vice Minister of the Ministry of Coal Industry, made a report during the conference on the results of competition comparison. In his report, he first pointed out that, under the leadership of the various levels of Party committees, the entire rail and mine staff, and workers of China's coal mine carloading stations achieved noted results during the second quarter on battle fronts of

coal production and transport. This they did by learning Fou-hsin's experience, emulating Fou-hsin, building up efforts, struggling for upper reaches, cooperation, extracting potentials, and agitating for technical revolution and renovation.

Many advanced units have stood out in the red banner emulation movement for "high quality, high output, more and speedy shipments."

Among these, the 10 coal mine-rail stations of Pei-p'iao, Fou-hsin, Fang-tzu, Chiao-tso, Shuang-ya-shan, Ti-tao of Chi-hsi, Shih-jen of T'ung-hua, Ta-t'ung, Feng-feng and Pao-t'ou were judged red banner victorious units and were gloriously rewarded with red banners of rail-mine cooperation jointly by the four conference participating organizations.

Great progress was also made by the five coal mine-rail stations of Hao-pi, Ching-hsi, Heng-shan of Chi-hsi, Ching-ching and T'ung-hua Iron works. They should be given honorable mention.

The common characteristics of these units have been serious attention by leadership, conscientious promotion of Fou-hsin's experience of rail and mine cooperation, intensive and thorough mobilization of masses, concrete measures, rapid movement, and one hundred percent efforts.

Many coal mines and rail stations unified their transport organizations, strengthened their leadership, built low cost and high efficiency sliding slope coal storage bins, eliminated the practice of dumping produced coal on the ground, and speeded up the turn-around of cars.

For instance, the single operating time of the Pao-t'ou station-mine was reduced by 3.1 hours compared with the first quarter. The net load of the Fang-tzu station-mine was increased 2.2 tons over that of the first quarter.

Through trains of the Hao-pi station-mine were increased 44.6 percent over the first quarter. An operating time of 3.1 hours was achieved by the Ching-hsi station-mine, and a net load of 45.5 tons was attained. The Fang-tzu station-mine attained a through train rate of 90.3 percent. These were the highest records achieved in China.

The Fou-hsin station-mine strengthened and improved its original records and continued its intensive mass movements during the second quarter. Its Party committee secretary personally took charge. In the month of June alone 180,000 tons of stockpiled coal were shipped. As a result of the mobilization of the masses, the Fang-tzu station-mine was able to build, within a short period of time, a 130 meter long sliding slope coal storage bin capable of holding one day's coal production. This raised carloading efficiency 20 times. As a result, its carloading force was reduced by half in spite of a 25 percent increase in car-loading.

Because of intensive and thorough mobilization of the masses, the Chiao-tso station-mine overcame difficulties of man power and material shortages during the process of building simple coal storage bins. They developed a set of "firm, extracting, cooperation, and substitute" experience (namely: taking a firm hold, extracting potentials, carrying out cooperation and mutual assistance, and searching for substitutes). For instance, when its Li-feng mine was short of steel plates, the Chiao-tso station-mine found a way of substituting welded broken coal chute plates.

When its Wang-feng mine was short of cement, the railway station immediately sent 10 tons of cement. When carloading workers of its Hsiao-ma-ts'un mine heard about the building of coal bins, they immediately organized a volunteer labor force and picked and delivered, in a matter of few days, over 80 tons of rocks.

Vice Minister LIU continued by pointing out that, while sizeable results were obtained in coal loading and transporting work during the red banner emulation movement for "high quality, high output, more shipments and fast shipments" implemented and carried out by China's coal mine carloading stations in the second quarter, development was not sufficiently balanced. The proposed targets were not completed and definite weaknesses still exist in some bureaus and mines. Evidence of this is as follows:

1. The receptiveness of some units in learning from Fou-hsin's experience of rail and mine cooperation was not high enough. Even now, lack of cooperation still exists. This is unfortunate. For instance, the Tsao-chuan station and mine mutually distrust one another and are dissatisfied

with one another. They argue constantly and cannot reach a decision as on areas to which cars should be dispatched. One result is that cars sometimes do not leave on time.

Because of the poor relationship between the station and the mine of P'ing-ting-shan, a new intersecting line was constructed. As a result, its single operating time became longer and longer. In April, it was 11.4 hours; in May it was extended to 13.9 hours; and in June it was further extended to 15.3 hours.

2. The leaders of some units did not pay enough attention and did not take a firm enough hold on this work. Mobilization of the masses was not intensive and not thorough. As a result, the work has stopped in the planning stage. Actual operation and measures have not followed closely. Consequently, targets have not been properly attained.

3. Some units did not show sufficient interest in the building of simple coal bins. They insisted that there were too many difficulties. Some wanted to do it on a large scale or in the foreign way. Some were satisfied with the existing situation and did not seriously organize and carry out technical measures decided upon in the past.

4. Some units did not actively organize their forces and find ways to fulfill proposed targets. They only partially understood the meaning of having a solid basis on which to work. When targets could not be fulfilled, they simply lowered the targets - to the point that some units actually lowered the proposed targets below the levels they had fulfilled during the first quarter. This method could produce only a passive effect. F

For the above reasons, the various units are asked to pay attention to the following projects:

a. Conquering rightist deviation and conservative ideologies; taking a firm hold on the favorable opportunities of August and September by further implementing and carrying out an imposing increase-production, practice-economy movement; conscientiously and thoroughly carrying out the directives of the Party central committee, to build up efforts and to struggle for the upper reaches in order to guarantee safe fulfillment of coal production and trans-

port tasks; and raising coal quality and lowering the targets of ash content, gangue content and cost.

b. Making a strong determination for the rush transport of stockpiled coal. Under the leadership of individual Party committee members, all mines with stockpiled coal must exert maximum efforts to organize short hauls and move stored coal to car loading points before the national holiday and struggle for its outward shipment. During the next comparison of competing results, the movement of stockpiled coal will be considered a principal target.

c. Controlling the building of simple coal storage bins. It is best to have them fully completed for production before the national holiday. Only by tightly controlling the building and completion of coal bins, can the requirements of fast loading and shipping be practised and guaranteed. This we must do so that the contradiction between transport and production may be solved, and all coals needs satisfied without delay.

d. On the basis of individual concrete conditions, the various units may work out the targets proposed by the Fou-hsin on-the-spot conference. Working out of these targets must be based on the spirit that maximum efforts shall be built up and truth will be found from facts. Results shall be submitted to the Ministry for checking and final decision.

e. After this competition comparison conference, the various units are asked to decide upon the right moment and pass on the spirit of this conference to the masses. At the same time, we want you to examine carefully the relationship of rail and mine cooperation. All problems should be solved immediately.

He noted that half of the third quarter has passed, and urged the various levels of leaders to pay great heed to this work. He asked them to strengthen the leadership of transport work and to adopt measures to realize over-all completion of the proposed targets, save China's transport capacity, guarantee fulfillment of coal production and transport tasks, and satisfy the urgent coal requirements of departments engaged in national economy.

The tenth anniversary of China's national holiday is fast approaching. Let us, the entire staff and workers of railways and mines, build up our efforts and march bravely forward under the beacon of the Party's general line for socialist construction.

Vice Chairman HSU of the National Committee of China's Railway Workers' Union, and Vice Chairman LI of the National Committee of China's Coal Mine Workers' Union called upon the staff and workers of China's railways and coal mines to move actively. They called for even greater efforts to push the red banner emulation movement for rail and mine cooperation to a new high tide with bitter, actual and ingenious work, and an endeavor for the overall realization of proposed targets.

Aside from intensively promoting Fou-hsin's experience of rail and mine cooperation, the experiences of the red banner and other units should be conscientiously learned. The various levels of union organizations are asked to participate conscientiously in organizing competing assignments under the unified leadership of the Party. This should be done carry out the work of summarizing the comparisons made on the competition, to educate the railway and mine staff and workers in establishing the "railway and mine one family" ideology, to take a firm hold of model operations, to exemplify model workers, to carry out in a big way technical renovation and technical revolution, and to make concerted efforts in the running of red banner through trains.

During this telephone conference, representatives of the Pei-p'iao, Chiao-tso and Fang-tzu coal mines and railway stations submitted conditions for the guarantee of a continued leaping forward. They also separately made friendly challenges to the coal mines and railway stations of Fu-shun, Liao-yuan, Hao-kang, Cha-lai-no-erh, K'ai-luan, P'ing-ting-shan, P'ing-hsiang, Tzu-hsing, Yang-ch'uan, Ching-hsi and Hsi-shan.

THE BROAD STRIDING SHANSI COAL INDUSTRY

[The following is a full translation of an article submitted by CHIA Ch'ung-chih, Chief of Shansi Coal Mine Control Bureau, appearing in Mei-t'an Kung-yeh, (Coal Industry) No 23, Peiping, 20 October 1959, pages 19,20.]

Through socialist revolution and socialist construction in the past 10 years, China has accomplished glorious earth shaking achievements in various fields. Under the correct leadership of the Ministry of Coal Industry, the Shansi Provincial Committee of the Chinese Communist Party and the Provincial People's Council, and through the active support of the Shansi people and departments both inside and outside Shansi and through the unselfish assistance of Soviet specialists and the entire coal mining staff and workers, Shansi's coal industry has achieved flying developments. Coal production planned for the entire province in 1959 is 40 million tons, an increase of 14 times over 1949.

Shansi is a "sea of black gold." To develop this extremely rich coal field, 87 pairs of coal shafts have been built, reconstructed or rehabilitated during the last 10 years. This has increased the designed capacity by 56,300,000 tons. Following developments in geological exploration and basic construction, an important Chinese coal base was established in this rich Shansi coal field. From now on, Shansi will follow even more closely the Party's general line for socialist construction of building up efforts, struggling for upper reaches, and quantity, speed, quality and frugality, and continue to move forward with broad strides.

During the last 10 years, especially through the big leap forward of 1958 and the continued big leap forward of this year of 1959, the staff and workers of Shansi's coal mines have accumulated a great deal of valuable experience through carrying out thoroughly the Party's general line for socialist construction and various plans and policies related to coal production and construction.

THIS
PAGE
IS
MISSING
IN
ORIGINAL
DOCUMENT

As a result of the work described above, rich fruits were produced in 1958 in both production and construction. An unprecedented big leap forward emerged. Compared with the year of 1957, coal production for all Shansi increased 55 percent. Investments expended on capital construction increased 77 percent.

The great significance of 1958's big leap forward was demonstrated not only by glorious achievements but, even more important, by the rich experiences created during 1958. It made clear to us the road for present and future high speed development in production and in construction.

With regard to the period since the start of 1959, a temporary development of rightist deviation and lax sentiments on the part of some cadres caused production to go down sometime in January. After the large coal extraction battle was implemented in March, production levels immediately increased sharply. They reached 29 percent over February.

With the rebirth of rightist deviation ideologies on the part of some cadres in May and June, a production drop followed immediately. However, this was followed in turn by a thorough practice of the Central Committee's directive to oppose rightist deviation and to build up efforts. As a result, a state of steady increase in coal production emerged. Output during the middle 10 days of September was 48.13 percent higher than that of the same period in July. Having gone through these ups and downs, the people's understanding of the great significance of the general line, and the 1958 big leap forward experience, has become even deeper.

B. Over-all planning, division of labor and cooperation, full utilization of all active factors which can be applied to coal production and construction, and enabling these factors to develop their maximum effect.

The above have had a gigantic influence on the rapid construction of China's important coal base in Shansi Province. Aside from developing production and construction on state operated coal mines, such favorable conditions as the special characteristics of Shansi's coal resources and the long coal mining experience of its masses, have been fully utilized to develop coal mines.

operated by special districts, shih, hsien, and communes to increase coal production.

In 1958, after the Party had further specified the walking-on-two-legs policy of simultaneous development of central government industry and local industry; large scale enterprises with medium and small scale enterprises; and foreign style production with native style production; under the conditions of centralized leadership, overall planning, and division of labor and cooperation, various levels of Shansi Province coal mine leadership cadres gave even greater attention to the development of local coal mines.

The principal measures we have adopted during the past 10 years in the development of local coal mines, have been centralized leadership, overall planning, division of labor and cooperation, and the full development of the active-ness of special districts, shih, hsien and rural communes in operating coal mines.

To conquer fund and equipment difficulties, we adopted the concrete methods of mine supporting mine (rehabilitation period), from small to large. We started with native methods, and general development, key point improvement and from native to foreign styles, and selected for gradual technical reconstruction small coal mines with rich reserves, near railways or where railways could possible reach in the near future.

The three largest coking coal bases in Shansi Province at present, the Hsi-shan coal mine, Fen-hsi coal mine and the Huo-hsien coal mine, were developed from comparatively small local coal mines.

The increase in production of local coal mines in the last 10 years has been extremely rapid. If an index of 100 is used for the production of all local Shansi coal mines in 1949, the index for 1959 would be close to 887.

Coal production from local coal mines during the period of 1949 to 1958 accounted for over 41 percent of Shansi's total coal production during the same period. This was not only a great contribution in satisfying requirements of civilian and local industrial needs, it

also helped state-operated coal mines complete coal shipments in support of all China.

With the rapid development of state and local coal mines, the initial formation of a network of coal bases on a provincial scale has already been made. This network covers eight large coal bases, 20 medium bases and more than 1,100 small coal pits scattered over all of Shansi Province.

C. With full utilization of the natural resources of Shansi's coal fields, and based on the state's investment limitations and coal requirements, we carried out, during the rehabilitation period and the First Five-Year Plan period, the policies of from small to large, simultaneous construction and production, simplification out of necessity, gradual improvement, less spending, more coal output and fast coal output.

With the development of state construction and increases in machinery manufacturing capacity, as well as an increasingly tight labor situation, we adopted the policy of gradual improvement of the standard of technical installations of large and medium scale coal shafts.

Based on this policy, we first devoted great efforts to rehabilitating and reconstructing existing mine shafts, and fully developed the production potentials of the original shafts.

Next, in the scale and type of shaft construction, we adopted the method of uniting large, medium and small, from small to large, and more inclined shafts and level tunnels. Further, because the state needed coal urgently although its treasury had no spare funds, and the machinery manufacturing capacity was still comparatively weak, we adopted the method of using, out of necessity, simple mine shaft and surface equipment and of doing as much shaft and underground roadway construction as possible.

These methods meant less spending, faster coal output and more coal output. This is shown clearly by the following statistics. Production in 1959 from state-operated coal mines will be 25,970,000 metric tons more than the 1,030,000 tons produced in 1949. This represents an increase of 25 times.

From 1950 to 1958, the investment for shaft construction for all state-operated coal mines in Shansi averaged less than 13 yuan per additional ton of coal production capacity. It was exactly through the adoption of these measures that Shansi coal mines were able not only to guarantee the province's own coal requirements during the big leap forward of 1958, but also enabled the amount of outgoing coal shipments to increase rapidly.

Upon entering the second Five-Year Plan period, and following improvement of the state's construction standards, and the daily increase of mine shaft production scale, we first took hold of transportation reorganization and the steady improvement of the standards of technical installations of large and medium mine shafts. We adopted the most efficient mechanical installation for coal extraction at working faces, hauling in the main roadway, and hoisting to the surface production systems of storage, screening and loading.

In the construction of modern large scale mine shafts, the capacities of shafts Chin-hua-kung No 2, Yun-kang and Chiang-chia-wan of Ta-t'ung; Tieh-mo-kou, Hsi-ch'u and Chiu-yuan of Hsi-shan; and Pei-t'ou-chu of Yang-ch'uan, etc. are all over 2,400,000 tons.

With the flying development of industry, communications, and transportation, the future of the Shansi coal industry during the next 10 years of construction development will be even brighter. On the other hand, with the continued improvement of the degree of mechanization and labor productivity, labor conditions and the material and cultural living of the miners have also improved constantly.

Under the beacon of the Party's general line for socialist construction and under the capable leadership of the Party and Chairman MAO, we have complete confidence that we can mobilize the masses, rely on the masses, continuously oppose rightist deviation, strengthen our work efforts, and enable Shansi's coal industry to move ahead rapidly!!

HIGH PRODUCTION EMULATION MUST
BE DEEPER, BROADER AND MORE
ENDURING

[The following is a translation of an extract from an article written by PO I-po, this article appears in Mei-t'an Kung-yeh (Coal Industry), No 24 and 25, Peiping, 2 November 1959, page 2.]

The present political and economic situation in China is very good. This is indeed a cause for rejoicing. In spite of the worst disaster in agricultural production in the past few years, total output of foodgrains and cotton, on the foundation of 1958's big leap forward, has enjoyed large increases. Production of industries and communication continues to rise. The market is prosperous and bustling. This fully demonstrates the gigantic power of the general line, the big leap forward, and the people's communes. Moreover, these elements are continuing to demonstrate even greater power.

Take the industrial front alone; on the foundation of 1958's big leap forward, industrial production achieved new increases during the first seven months of 1959. Especially after the Eight Plenary Session of the Eighth Central Committee of the Party issued the call to "oppose rightist deviation, build up efforts, and persist in increase-production, practise-economy practices," the large staff and working masses, enthusiastically responding to this great call of the Party, immediately stirred up a new high tide of mass increase-production, practise-economy movement.

This has caused production, during the recent period of more than two months, to rise in a straight line. The gross industrial production value of August was 14 percent higher than that of July. That of September was approximately 27 percent higher than that of August. As a result, production tasks for the first three quarters of 1959 were completed ahead of schedule and with overfulfillment. Compared to the same period in 1958, very large increases in production were made.

Moreover, the gross industrial production value was 45.5 percent higher than the same period of 1958. Furthermore, out of 54 major products, the production of 24 of them has already exceeded their total production for the big leap forward year of 1958.

On the coal industry front, production was also outstandingly fulfilled. During the first nine and a half months of the year [1959], 274,500,000 metric tons of run-of-mine coal were produced. This is 1.7 percent higher than total production of the big leap forward year of 1958.

The Eighth Plenary Session of the Eight Central Committee of the Party has greatly heartened you. China's coal production has increased rapidly since August. Average daily production, was 784,000 tons in July, 877,000 tons in August, 1,129,000 tons in September. For the first 10 days of October average daily production was 1,140,000 tons.

Furthermore, the "normal rule" of first lax and then tightening, i.e., the production level of the first 10 days of the month lower than that of the last 10 days of the preceding month, has been conquered. Production has been able to increase persistently and continuously at high speed.

In capital construction for the coal industry, great achievements have also been made. During the period of January through September, the designed production capacity of mine shafts, whose construction was either started or being continued, reached 215,760,000 tons. This represents an increase of 78.7 percent over the same period of 1958.

The production capacity of mine shafts which actually started production was 18,690,000 tons, an increase of 25 percent over the same period of 1958. The run-of-mine coal processing capacity of coal washing plants which started production was 24,500,000 tons. This is an increase of 6.6 times over the same period in 1958. These figures explain fully how production and construction of the coal industry in 1959 are continuously leaping forward.

THREE DAYS WITHOUT PRODUCTION,
CAR LOADING CONTINUES: THREE
DAYS WITHOUT CARS, PRODUCTION AS USUAL

[This is a translation of an extract taken from an article prepared by Han Shih-chen, Deputy Director, Fou-hsin Mining Administration. The article appears in Mei-t'an kung-yeh (Coal Industry), No 24, 25, Peiping 2 November 1959, page 75.]

An intimate relationship exists between coal production and railway transportation. When transportation work falls behind, normal progress of coal mine production can not be guaranteed. Abnormal coal production will also affect the fulfillment of railway transportation tasks.

Consequently, from the standpoint of the coal mines, to reach the point of being able to continue production as usual when insufficient cars, or even no cars at all, have been dispatched by the railway, and of being able to guarantee loading when production falls below the capacity of the cars dispatched, or even when there is no production at all, is greatly significant, not only to the fulfillment of transportation tasks, but also in guaranteeing a steady increase in coal production.

During China's unprecedented big leap forward of 1958, output of the Fou-hsin coal mine reached 13,600,000 metric tons. This represented an 80 percent increase over 1957. The outward shipment volume during the fourth quarter of 1958 meant that more than 1,000 cars had to be loaded each day.

However, because of a shortage of railway rolling stock at the beginning of the fourth quarter, coal stockpiled on the ground reached 1,200,000 tons. This resulted in heat generation and spontaneous combustion of a lot of coal. By November ground stockpile increased to over 1,400,000 tons. Fire hazards became even more serious.

On the other hand, relations between the railway and the mine, at that time, were not smooth. Although contracts had been signed and agreements reached more than half a

year before, ideological understanding was still not complete. At that time, the shortage of rolling stock was one factor. On the other hand, the railway did not believe in the loading capacity of the coal mine. At the same time, long loading time caused a slow turn around of rolling stocks. These were reasons why the mine was not given sufficient cars.

The great Rectification Movement awoke the large cadres, staff, and workers. Influenced statesman-like way example of handling business relations as practiced by the Ministry of Coal Industry and the Ministry of Railways, the staff and workers of the railway and the coal mine began to realize the relationship between coal production and transportation. They understood clearly the seriousness of having large volumes of coal on the ground.

Under the direct leadership of the Ministry of Coal Industry, the Coal Mines Control Bureau and the Fou-hsin Shih committee member of the Chinese Communist Party, the Chin-chou Railway Bureau and the Fou-hsin Mining Administration started in November 1958 an intensive mass movement, and agitated for high production of transportation.

Unification in ideology, in organization, and in movement was further achieved. The experience of Fou-hsin rail and mine cooperation was utilized. As a result, the original single operating time of 14 hours was essentially cut in half.

In a period of 10 months, Fou-hsin Administration's stockpile of 1,400,000 tons was reduced gradually to around 500,000 tons in July of this year [1959]. During this period, coal output had an average monthly increase of 370,000 tons over the same period in 1957. This, plus the rush loading of 100,000 tons of grounded coal each month, meant a monthly increase of 470,000 tons of coal shipped. Compared with the same period in 1958, the number of cars loaded from January through September 1959 increased from 136,119 to 166,441, or 22.3 percent. The cumulative average time of single operations was reduced from 11.9 hours to 6.4 hours.

Compared with 1958, there were 966 more through trains, an increase of 425 percent. Compared with 1958, the net load was increased by one ton for a rise of 2.5 percent.

Why, was the railway able to ship several hundred thousand tons extra each month without a large increase in rolling stock? Why, was there also a marked increase in transportation targets? These were principally the results of over-all cooperation between the railway and the mine, and the intensive mass movement for loading and transportation by our administration.

EXPERIENCES IN ENLARGING COAL BINS,
INCREASING STORAGE CAPACITY,
REDUCING CARLOADING TIME, AND
IMPROVING COAL QUALITY

[This is a full translation of an article written by Liu P'ei-chih, Chief of the Transportation Department, Ching-hsi Mining Administration, the article appears in Mei-t'an Kung-yeh, (Coal Industry), No 24, 25, Peiping, 2 November 1959, pages 77,78.]

Enlarging Coal Storage Bins; Reducing Carloading Time

Our administration has a total of six productive mines. In 1957, 2,300,000 metric tons of coal were produced; production leaped to 4,060,000 tons in 1958; and the production planned for 1959 amounts to 6,410,000 tons. Production increased by leaps and bounds. However, equipment of the coal loading yard remained unchanged.

The prominent contradiction which followed was the great inadequacy of loading and shipping equipment in meeting the needs of production development. This created a passive situation of "not fast enough loading when there were more cars, and no room for storage when there were few cars." How to achieve "fast loading, more storage, and more shipment" became a pressing problem for the transport and marketing staff and workers of the entire administration.

The ideology of "craving large and wanting foreign" existed in the minds of most of the staff and workers at that time. They asked for an increase in screening and dressing equipment. They sought construction of new funnel type coal bins, the purchase of additional electric shovels and coal scrappers, large scale excavations to develop coal storage yards, etc.

When this problem was discovered by the leadership, the erroneous ideology was immediately criticized. The entire staff and workers were called upon to demonstrate their communistic style of thinking without fear, and to overcome difficulties by a thousand ways and with a hundred plans.

Moreover, with "full development of the effects of existing equipment, by working according to circumstances, by simplification out of necessity, by large scale technical revolution and technical innovation, by finding more expense-saving ways, and suggesting more expense-saving ideas" as subjects, sound offs and debates were implemented among the staff and workers.

Through these debates, the ideological understanding of the staff and workers became clearly defined, and more than 200 logical suggestions were submitted one by one. After being studied by the leadership, those adopted and put into practice with notable results included the following:

1. Expansion of side wall sliding slope coal bins.-- The existing 160 meter (only 75 meters used) sliding slope coal bin of Ch'eng-tzu mine (coal storage capacity of 15,000 tons with 9,000 tons of dead coal [refers to coal which does not slide down by itself; the term "live coal" used later will have the opposite meaning]; mine cars could be loaded each time; carloading time 0.5 hours) was lengthened by 90 meters.

Walls were built with stone slabs and large pieces of gangue rocks. The height of walls was eight meters, the bottom width four meters and the top width 1.6 meters. There were 20 coal sliding openings, 1.2 meters wide, one meter high and at three meter spacings. Total materials used included 2,4000 cubic meters of stone slabs, 1,300 cubic meters of sand and gravel, 190 metric tons of lime, 56 tons of self-manufactured cement and four tons of reinforcing steel (utilizing old rails).

Including excavation, road relocation and bridge construction, the total cost was above 50,000 yuan. The work took two months to finish. The completed coal bin has a total length of 250 meters, a coal storage capacity of 30,000 tons, and 18 cars can be loaded in 50 minutes. Its live coal carloading capacity is more than enough for six days of production.

The length of An-chia-t'an mine's sliding slope coal bin was also increased from its original 70 meters to 120 meters. Its storage capacity was raised from 10,000 tons to 17,500 tons and its effective coal [probably same as

live coal] was increased from one and half days' production to two and half days' production. The bottom of the bin is laid with gravel. On top of this are shaped chutes lead directly to funneled outlets.

Small slanting chutes are built on both sides of the main chutes. These lead coal stored on the slides into the main chutes. During loading, each car is fed by three funneled outlets. The cars are controlled from a distance by electrical winches. An average of 30 minutes is required to load nine cars.

To solve the difficulty of getting coal down past rusted areas of the iron chutes caused by coal wet during raining seasons, the Ch'eng-tzu mine changed iron plate chutes to self-manufactured ceramic chutes. Experience has proved that the use of ceramic chutes has not only saved large quantities of steel for the state and reduced coal loading labor, but has also reduced loading time.

The time required for loading 50 tons of powdered coal (ceramic chutes are not suitable for lump coal because of its greater impact) was reduced from five minutes 30 seconds to three minutes and 54 seconds. Because of the glazing of ceramic chutes is thin, the two pieces near the funneled opening have to be replaced every two months. Installation of the gate plate is changed to the outside wall of the coal bin, and its operation controlled by a lever handled by the coal leveling worker. This eliminates the need of a separate gate operator, and loading delays caused by difficulties of opening the gate. The loading efficiency of this type of coal bin averages 12 to 20 tons per minute. The loading cost is around five fen. Not only is it unaffected by power stoppage, but it also does not require repairs and maintenance, and is most welcome by the railway.

2. Improving electric conveyer loading-- changing position of electric conveyers based on the principle of no expenses or little expenses and on the topography of the land. The principal ones are:

a. A heaping pile growing up from level ground: the coal storage yard of Ta-t'ai mine's Ch'ing-shui-chien mining district is long and narrow, bordering the river on the south side and the railway on the north side. Its

storage capacity was 3,000 tons and, normally, when there were no cars for three or four days, production would be affected. Based on the lay of the yard's land, they built a 70 meter long and 13 meter high platform on the east and west ends of the yard.

An electric conveyer was installed on each of the two platforms and below the head of each conveyer, two electric conveyers were installed for direct loading of coal into cars. The body section of the conveyer is covered with wooden boards. When coal comes out of the mine through the level drift, it is dumped at the tail end of the conveyer.

Through the platform it is hoisted to the car loading conveyer section. When there are no cars, the coal is stored. During loading, the wooden boards are taken out as the loading progresses. Using this "building a multi-story house" method, the storage capacity has been increased to 15,000 tons, five times what it was previously.

b. Pit excavation at the tail end of the conveyer: after coal produced at the Fang-shan mine is transported to the T'o-li coal storage yard by aerial ropeway, it is dumped on the ground from the top of the ropeway station. The station platform is four meters high. Installed there are five electric conveyers. At the tail end of each conveyer, there used to only enough room for 300 odd tons of coal.

When there was too much stockpiled coal, the coal cars had to be pushed manually some distance away for storage. This proved very wasteful in terms of expenses. To correct this, a large hole was dug on the level ground and was made into a square pit with bricks and slabs. The tail end of the conveyer was installed in the pit, with its front end extended into the railway coal cars to be loaded. Two moving feed sections which could be turned in all directions during operation were used.

In order to raise the storage capacity, an electric conveyer was used to raise the coal pile to five meters high. Using the method of "building a tall structure and digging pits," the amount of coal which could be stored at the tail end of each conveyer has been increased to 1,000 tons, raising its effective capacity more than three times.

C. Building a framework cover over the conveyer body: the Mu-ch'eng-chien mine utilizes the mountain slope as a coal storage bin. After the coal comes out of the mine, it is dumped with a rotating skip onto a 35-meter high mountain slope. Nine electric conveyers are installed at the base of the mountain. These extend all the way to the loading line.

Originally, this place could store 10,000 tons of coal. Because of a lack of rolling stock and too much coal, the back halves of the conveyer sections have been covered with wooden frameworks constructed of mine props, as in the case of underground roadways.

When there is too much coal, the conveyer is shortened and its tail section moved forward. When there is less coal, the tail section is moved backward. At the tail end of the wooden framework cover, there are vertical openings. Coal goes down these openings into the chutes.

As a result, the storage capacity has been increased from 10,000 tons to 35,000 tons, thereby raising the capacity three and half times.

Reducing loading time to increase outward shipment volume -- the Mu-ch'eng-chien mine has four rail lines for its own use. The original set-up consisted of electric conveyers loading on the No 2 line, with 12 cars loaded each time requiring 91 minutes.

With an average of six deliveries each day, the daily shipment was 3,300 metric tons. Because of limitations in railway equipment, shortages of car deliveries could not be made up. Thus, monthly plans could never be fulfilled.

Most of the coal produced was stockpiled in a gully in the eastern part of the mine. This stockpile grew to 65,000 tons. To solve this predicament, the staff and workers built a sliding slope bin of 400 tons capacity [sic] with wooden posts on the mountain slope next to the No 4 line.

The coal stockpiled in the eastern gully was moved to this wooden bin with six electric conveyers. A 20 horsepower winch which can pull six cars has been installed on the railway.

In this manner, loading can be carried out simultaneously from the two east and west bins. By this improvement, the number of cars for each train has been increased from 12 to 16. The loading time has been reduced from 91 minutes to 53 minutes; the number of operations per day has been increased from 6 to 10.

As a result, the daily outward shipment volume has been increased from 3,300 tons to 7,300 tons. This improvement, therefore, has considerably raised outward shipment capacity.

Improving Coal Quality

Since the Central Committee recommended the improvement of quality of products and the shih committee member called for implementation of the "three high" movement of "high production, high quality and high efficiency," our administration has started an intensive mass movement, and has achieved very important results. Among these results, the most outstanding ones have come from the An-chia-t'an mine.

The planned target of ash content in An-chia-t'an mine's marketed coal was 26.5 percent. However, during the second quarter, the ash content achieved was 30.98 percent, exceeding the planned target by 4.48 percent. The gangue rock content of the marketed coal was as high as 4.77 percent. The quality of coal was very poor and consumers were very dissatisfied.

Our administration called two coal quality conferences in a row during April and May. During these conferences, we transmitted the directives of the national coal quality conference regarding measures of improving coal quality.

Under the personal leadership of the Party secretary and the mine director, the mine immediately stirred up an intensive mass movement and re-established the coal quality examination organization. The system of sampling, spot checking, examining coal received, and rewards was strengthened. Nineteen coal quality examiners and 53 gangue rock picking workers were assigned throughout the whole mine. A total of 125 persons were selected in sections and groups to be responsible for coal quality.

The ratio of mining high and low ash coal seams was adjusted. Rock picking on 25 millimeter screens was put into practice. As a result, coal quality reapidly improved, and ash content decreased every month, as can be seen from the following table:

| Item | Month | | | |
|--------|-------------|-------|--------|-----------|
| | 2nd quarter | July | August | September |
| Ash % | 30.98 | 26.28 | 26.73 | 24.5 |
| Rock % | 4.77 | 1.73 | 1.13 | 0.75 |

Why did the quality of An-chia-t'an's coal improve rapidly? The principal reasons were:

(1) leadership attention.-- The Party committee secretary and the mine director personally went to the front lines to direct the battle. From every section to every unit, and from the mine shafts to the coal bins, sentries were set up every step of the way. Every place was guarded. A struggle to eliminate gangue rocks in coal was impressively implemented.

During the Party and personnel conference, the Party committee secretary strongly voiced the political and economic significance of improving coal quality. The director called together section heads and unit heads of the quantity rock producing No 8, 15 and 16 groups to examine their ideology of not paying enough attention to coal quality. Among the coal produced by group No 15 of section 1 on 15 August, was a piece of large rock weighing more than 150 chin.

The mine director placed this piece of rock on the conference table and immediately called section heads to look at it one by one. He pointed out that this type of quantity emphasis, quality negligence ideology must be corrected immediately. During each day's production assignment conference, the chief engineer checked fulfillments in connection with coal quality and immediately criticized or praised as the case might warrant.

(2) strengthening the emphasis on propagating the coal quality concept. Regardless of the size of the meeting, the Party committee secretary and the mine director regularly provided ideological education for the staff and workers regarding improving coal quality. Using black boards, results were published each day; criticisms and praises were made on "large character newspapers." The cultural group of the mine also put on a play called "Voice of the Gangue Rock." As a result, staff and workers received a deep understanding of the meaning of improving coal quality.

The WEI Ho-hou shift of group No 4 copied each day's black board news and transmitted fulfillment conditions to the small units. The CHEN Tzu-jung shift of group No 25 used small rakes to separate gangue rock underground. Whenever broken hanging walls or too much rock was found in the coal, the heads responsible for coal quality in each shift would strongly suggest to the shift bosses that they leave a pillar, stop coal extraction, and open a stop hole elsewhere.

(3) strict examination and strengthening control system.

a. Uniting over-all examinations with key-point identification.-- A general examination was first carried out on the quality of coal of a coal seam to be mined. A coal sample of the mined coal seam was then taken each month. Results of the laboratory tests were immediately reported to the leadership.

In May the ash content of coal in the eastern roadway of the 400 meter No 2 mining district of Pei-li No 6 "area" became as high as 61.72 percent. A decision to stop extraction was made immediately by the Party committee member. Identification of coal quality, using the rapid ash testing method, would be carried out at any working place which had suddenly deteriorated in quality. In June, the coal seam ash content of three working places in No 3 area went up to over 40 percent. In every case, decision the leadership decided to stop mining.

b. Strict control of separate storage and separate shipment of good and secondary coal.-- Checking was done at the mine shaft and separate storage and separate shipment

of good and secondary coal were conscientiously carried out. Poor quality coal was processed depending on individual conditions. For instance, on 30 June Group No 23 produced 50 cars of coal. Upon rapid testing, the ash content was found to be 76.87 percent. The entire load was dumped on the gangue rock pile and the output was not counted. On 30 July, the ash content of coal produced by Group No 8 exceeded 50 percent. It was dumped into the poor quality coal bin. As much as 1,365 tons of coal produced in August was classified as poor coal.

c. Picking gangue from the rock coal left on 25 millimeter screens.-- Stationary screens with 25 millimeter openings were installed at the heads of electric coal haulage conveyers. When the run-of-mine coal passed through these coal dressing screens, powdered coal would slide along iron plates into the selected coal bin. The lump coal left on the screens would move along chain conveyers to 50 millimeter screens. While this process was taking place, the picking of gangue rocks was carried out. This was only the first coal dressing.

The lump coal left on the 50 millimeter screens was controlled by gate plates and was allowed to enter the selected coal bin only after gangue rocks had been removed. Further gangue picking was carried out on small lumps which had passed through the 50 millimeter screens during their transportation on chain conveyers. This formed the second fine (ching hsi) dressing of coal. Each shift had 12 gangue rock picking workers. From January through August a total of 9,995 tons of gangue rock were picked.

d. The carrying out of coal quality rewards was re-established. The range of these rewards covered coal roadway advancing, half coal and half rock roadway advancing, and retreat working faces. The standards for these rewards are:

| % decrease of gangue content | 1 - 10 | 11 - 20 | 21 - 30 | 31 - 50 |
|---------------------------------|--------|----------|---------|---------|
| Retreat mining | 3 yuan | 3.5 yuan | 4 yuan | 5 yuan |
| Advancing | 2 yuan | 2.5 yuan | 3 yuan | 4 yuan |

Under the correct leadership of the Party and the top level, and encouraged by the decision of the Eighth Plenary Session of the Eighth Central Committee, the staff and workers of the entire administration will continue to oppose rightist deviation and build up their efforts. They will consolidate results already achieved and struggle for the upper reaches. They will implement increase-production, practise-economy movements and overcome difficulties with a thousand ways and a hundred plans. They will carry out mammoth technical revolutions and technical innovations. They will raise high the red banners and march forward on the heels of victory. They are determined to welcome the great year of 1960 with even more outstanding achievements.

THE GREAT REVOLUTION OF PRODUCTION ORGANIZATION IN COAL MINING ENTERPRISES

[The following is a full translation of an editorial appearing in Mei-t'an Kung-yeh (Coal Industry) No 26, Peiping, 20 November 1959, pages 18, 25.]

Any form of production organization must be suitable to production characteristics before it can meet the requirements of production force development. Production force development is continuous. The form of production organization must be improved continuously to meet change.

Under the leadership and the beacon of the general line of the Party, glorious achievements have been made in all directions by the coal industry. This has been particularly true since the 1958 big leap forward.

Since then flying increases have been made in production force. Moreover, the three-shift operational system of production organization has fallen behind the level attained by production force. Consequently, how to improve the production organization form so that it may meet the requirements as production force in its continuous development, has now become an important task of ours.

To achieve this end, we must first study the characteristics and principles in production of the coal industry. In this way, the form of production organization will be suitable to these characteristics and principles. It will also meet the requirements of a production force in its development. It will then be possible to improve enterprise management and form of production organization. It will also be possible to develop enterprise potentials, and continue a high speed development of the coal industry.

What are the characteristics of production coal industry? Its characteristics are underground operation, one product, many types of workers, many working steps, and a continuous change of working site. At the same time, the amounts of different types of workers and the quantities of work in different working steps are not in balance.

Sometimes more people are needed, sometimes less. Moreover the intervals [between working steps] are very large. These characteristics naturally create in the production organization a situation where a preceding work group or preceding working step opens up, from time to time, working conditions for the working group or working step which follows. This is also to say that objectively they are possessed with conditions for full utilization of time and space, for a wide scale practice of overlapping operations, and for unification of labor and leisure.

The practice of "four (shifts) eight (hours)" overlapping operations by Fu-shun, K'ai-luan and a number of other coal mines, has proved that wide promotion of overlapping operations in the coal industry is completely possible. This practice is also an urgent requirement of the masses. By the "four eight" overlapping operation, not only are space and time fully utilized and production increased, but also there are labor and leisure, labor and leisure unification, step by step balanced production, and continued large area high production.

On the other hand, it is difficult to achieve these points by the three shift operation. This is because the three shift operation is generally two shifts coal mining and one shift preparation. Each shift has its own operation. The various working groups and working steps nearly all have their own operations. Neither is there very smooth operational continuity between one shift and the next, between mining and preparation, and between haulage and hoisting. This extends the intervals between production.

Taking the mining shift, for instance, if an overlapping operation between shifts does not exist, a certain amount of time is customed just to take over the shift and make preparations for production. Generally, actual coal extraction starts one or two hours after the shift has begun.

Consequently, during the 24 hours of the day, the time of actual coal extraction is only around 12 hours (with two shifts). This is to say that around 12 hours are spent without coal extraction. To complete or overfulfill their tasks, workers sometimes must put in extra shifts or overtime work.

Therefore, the feeling of the masses about the three shift system is that its central problem is "three long." This means the time spent underground by the miners is long, the time not spent in coal extraction is long, and the amount of spare time is long.

With the practice of the "four eight" overlapping operation, the 24 hours in the day can be changed to 32 hours (calculated on the basis of four shifts of eight hours each). Moreover, actual coal production time each day can be as long as 20 hours. In this manner, the time of production interruption is greatly reduced, the work time utilization rate is improved, and space is fully utilized. This fully develops production capacity and equipment effect at the working faces.

On one hand, the "four eight" overlapping operation may be applied on a maximum basis between different working groups and between different working steps; on the other hand, it may also be applied as a logical adjustment when the amounts of work of different working groups and different working steps are not balanced. In this way, continued step by step high production may be achieved, improving labor efficiency, increasing production and reducing costs.

On the basis of results of this practice at the Fushun and K'ai-luan mines, production is generally increased by 20-25 percent, efficiency generally improved by 15-35 percent, and the cost of run-of-mine coal lowered 10-15 percent. Furthermore, safety in production is also greatly improved. These factors demonstrate the superiority of the "four eight" overlapping operation.

The practice of the "four eight" overlapping operation also brings the relationship between shifts and between persons closer, which facilitates mutual understanding and mutual cooperation. It, therefore, further propagates the spirit of the great communistic cooperation and strengthens unification.

The coal industry is an underground operation. Comparatively more clumsy physical labor is involved at present. The political, cultural, and technical levels of the staff and workers must be continuously improved. Consequently, shortening the time workers spend underground and guaranteeing them sufficient rest, learning and recreational

periods have an important significance in guaranteeing continued high production. This end can be accomplished by the "four eight" overlapping operation by which space and time are fully utilized. With the practice of the "four eight" overlapping operation, the workers will have enough time to sleep. They will also have more time for learning and recreation. Their working energy will be greater. Their attendance rate will also be greatly improved.

The "four eight" overlapping operation is a product of the big leap forward. Although it is in its infancy, it has already demonstrated its strength and superiority. It is the best type of production organization for socialist construction of the coal enterprises, and an important organizational measure for continued high production by the coal industry.

It fully demonstrates the spirit of quantity, speed, quality and economy. We must, therefore, pay to it sufficient attention, protect it, cultivate it, promote its practice without the slightest wavering. We must plan and systematically organize overlapping operations among different working groups and different working steps on the widest possible basis.

The ousting of an old and the establishment of a new always require a period of active struggle. Changing from the three shift operation to the "four eight" overlapping operation is a struggle between an advanced ideology and a backward conservative ideology. It is also a great revolution in production organization.

Consequently, we must be determined to oppose the conservative ideology, shatter old customs and stale rules, and implement debates. We shall, thereby, unify ideological understanding and strengthen leadership. Those strongly claiming such difficulties as insufficient hoisting capacity, insufficient tools, and shortages of equipment and personnel, thus delaying the practice of the "four eight" overlapping operation are wrong. The lively events of Fu-shun and other coal mines have effectively settled this problem. They have not increased workers and equipment in the carrying out of the "four eight" overlapping operation.

Nevertheless, production has been increased. Why is it that Fu-shun and other coal mines were able to carry out this practice and others could not? Is it because they have different circumstances? No. The key lies in the fact that the leaders of other coal mines have not liberated their thinking. They have not gained sufficient understanding of the characteristics and principles of the coal industry and the significance of the "four eight" overlapping operation.

The practice of the "four eight" overlapping operation is a great revolution in production organization. A series of new problems will undoubtedly arise in the process of its being put into practice. This calls for our making corresponding changes in our enterprise management system to meet the needs of the "four eight" operational system.

Corresponding measures must be adopted in the planning, assignments, material supply, haulage, hoisting, operating time, and wage system of the mine as well as in the work of the various departments supplementary to production. In this way, they will meet the requirements of this new form of production organization. Only thus will it be possible to promote vigorously the "four eight" overlapping operation and for the operation to achieve further development and improvement. Let us intensify our efforts to make it possible for the "four eight" overlapping operation to achieve rapid development in all the coal mines of China.

HOW T'ANG-CHIA-CHUANG [COAL] MINE
ADOPTED THE "FOUR EIGHT-HOUR-SHIFT"
OVERLAPPING OPERATION

[This is a translation of an extract from an article written by LIANG Kuan-li, appearing in Mei-t'an Kung-yeh, (Coal Industry), No 26, Peiping, 20 November 1959, pages 19, 20.]

Ever since Minister CHANG issued the call to promote the "four eight" overlapping operation during the Second Appraisal Conference of the National Coal Mine Large Area High Production Red Banner Competition, the revolutionary spirit of the entire T'ang-chia-chuang staff and workers has been greatly fired. Starting from 15 October 1959, this mine fought bitterly for five days and nights and eventually put into practice, over the entire mine, the "four eight" overlapping operation.

In all the dry mining working faces and in more than 90 percent of the advancing and development working faces, the "four eight" overlapping operation of three shift production and one shift preparation, and the "four eight" overlapping operation of four shift advancing were [respectively] put into practice.

Advantages of "four eight" overlapping operation

Although the "four eight" overlapping operation has only recently been put into practice at the mine, the average daily output of drying mining working faces has increased 9.73 percent. The efficiency of recovery miners has improved 6.16 percent. The average daily advance increased 3.27 percent and the efficiency of total advancing working personnel improved 2.87 percent.

The production time per shift of such direct production workers as coal miners and advancing and development workers is generally over an hour shorter than before. Consequently, this plan is supported strongly by the staff and workers and their families. They all

stated they would exert even greater efforts and that they would look after their families well. They promised to create new records in production as a reply to the Party's concern over them.

All these show that the practice of the "four eight" overlapping operation is an important means to continued high production at high speed. Through it, a union of labor and leisure can be achieved with maximum results. Our preliminary assessment of its superiority includes the following points:

A. High rate of advance and high production of working faces; facilitates the organization of balanced production and a carrying out of the big leap forward. The total average daily output of 10 dry mining working faces of the mine was increased from 4,718 metric tons, prior to the practice of the "four eight" overlapping operation, to 5,177 tons after its practice.

At the same time, the advancing rate has been increased. Based on 44 advancing and development working faces, total average daily advance was increased from 229.82 meters prior to the practice, to 290.55 meters after its inauguration.

B. High labor efficiency: in the allocation of labor forces, the mine adopted, during the promotion of the "four eight" overlapping operation, the practice of "using the original earth to build the same wall." The personnel of three shifts were divided into four shifts.

Consequently, the total number in the labor force was not changed. Because their energy had become more abundant, their efficiency was improved. The efficiency of recovery working faces was raised from 4.093 tons per man-shift before the practice of the "four eight" overlapping operation, to 4.345 tons after its practice. Efficiency in advancing work in terms of total personnel was raised from 0.383 meters to 0.394 meters.

C. Increases workers' resting time and raises labor attendance rate: by the practice of the "four eight" overlapping operation, not only was the production

time of the workers reduced by more than an hour as compared with before, but, because of the increase in shifts and the overlapping of time of production, economies were effected in trips up and down shafts, riding cars and waiting for skips, and checking out tools and lights.

With vigorous coordination by different assisting departments, the phenomenon of the five "line-ups" of checking out lights, checking out tools, getting into and out of skips, waiting for cars and buying food has been essentially eliminated.

Based on preliminary estimates, the amount of non-productive time of each underground worker has been reduced 1.5-2 hours since the "four eight" overlapping operation was put into practice.

Because of the increase in the workers' resting hours, the labor attendance rate has increased. Many old workers have sought out the district chiefs and said: "Now that the resting hours of the workers are longer and we no longer feel tired, there is no longer any need for rest rotations." (The leadership refused their suggestions with thanks.)

"We really cannot miss attendance anymore;" said new employee, Sun Pao-chiang. "Our leadership shows so much concern for us that we can no longer face the state if we miss attendance again."

Consequently, the labor attendance rate of recovery miners has increased from 92.47 percent to 93.73 percent. The advancing work attendance rate has also increased 4.68 percent.

D. Workers have even more time to participate in political and cultural learnings: the workers' hours for learning used to be extremely short. Sometimes, this time was consumed in pre-shift meetings.

As a result, the learning attendance of the workers was about 50 percent. After the practice of the "four eight" overlapping operation, this attendance increased to around 80 percent. In addition, learning system has become more normalized. Spare time social activities

of the workers and attendance at spare time meetings have also increased.

E. Approval by all staff and workers' families: the staff and workers have more spare time and return home earlier. Thus, they have more time for family affairs. Consequently, the practice is greatly supported by staff and workers' families.

For instance, after the practice of the "four eight" overlapping operation, the wife of unit chief Li Fang of the development area said to him: "The Party is concerned about us in everything; you, therefore, must lead your small unit properly. You can face up to the state only by advancing your work and by greater coal output."

Some families told their sons, "You must listen to the Party, listen to the older workers, endeavor to learn the techniques and improve your skill; otherwise, you cannot "face" Chairman Mao."

Every small family group [consisting of few families] agreed upon the "Five well" agreement to take good care of loved ones and encourage them to produce more.

F. Pushes ahead the improvement and increase of management work: with the practice of the "four eight" overlapping operation, great changes have taken place in the various production links. For instance, working step arrangement, production preparation, labor organization, safety, mechanical and electric work, hoisting, haulage, norm control, technical management and, especially field management have correspondingly improved with the practice.

If any one link cannot follow, production is greatly affected. For instance, based on present conditions, the time of operation of electric conveyers is more than three hours longer than during the three shift operation.

In the past, they operated for 16 hours. There was also a stoppage of more than an hour during this operating period for small repairs to be carried out. Now they are operated continuously from the start of the

first shift to the end of the third shift. This has given the field mechanical and electrical management a new problem. If this problem cannot be solved, accidents will often occur, continued high production cannot be achieved, and the completion of production tasks will be affected. The same situation holds true for others.

G. Better unification and cooperation: the "four eight" overlapping operation itself means the proper practice of the spirit of great communist cooperation by the different shifts. This is so because every shift not only must complete its own tasks but, at the same time, must also make proper preparations for the following shift. Only by the creation of mutually favorable conditions can continued high production be realized.

H. Because the workers have abundant amounts of energy, their thoughts are concentrated, their tension is high and there are greater guarantees of safety.

Furthermore, because of the "four eight" overlapping operation, roofs are broken down without delay and providing good conditions for safe production.

J. Facilitates implementation of technical innovation and technical revolution and improvement of workers' technical level: with the practice of the "four eight" overlapping operation and the change from three shifts to four, there are not enough technical workers to be assigned. Coupled with the fact that operating hours are shorter and tasks heavier, only by improving tools, changing to new techniques and promoting advanced experiences can tasks be fulfilled.

Consequently, the practice forces many workers to think of many ingenious methods. For instance, after the practice of the "four eight" overlapping operation; Liu Chao-lu, an old worker in the development area, changed 1.1 meter short drill rods into two meter long drill rods. He thereby increased the advance with every blasting of one meter to 1.8 meters.

At present, workers of recovery working faces in different districts are learning, before and after shifts, the experience of Lin-hsi mine's Comrade Wang Feng-yuan in expediting an entire conveyer unit. Efficiency cannot be improved if this experience is not practised.

Another thing is that since there are not enough technical workers, the only solution is to cultivate new workers to take the place of old workers. Consequently, new workers have even more opportunities to learn techniques.

K. Capable of greater saving of raw materials and lowering costs: since manpower and equipment have not been increased, although net production and efficiency have been raised, the cost of mining at working faces has dropped. Based on the statistics of 10 dry mining working faces, the cost is 4.05 percent lower than before.

*

*

*

To promote the "four eight" overlapping operation rightist deviation and conservative ideologies must be completely eliminated and mass movements must be carried out in a big way

*

*

*

The mine has also gone through a period of ideological struggle in its efforts to promote the "four eight" overlapping operation. When the "four eight" overlapping operation was first carried out, it had the active support of the majority of the workers and cadres. They felt that this was a way for continued high production, and for realization of a big leap forward of coal. They felt also that it was a good method to unite labor with leisure. They, therefore, expressed their support and completed various preparations and created conditions.

Many workers helped their leaders to think of ways and methods. However, rightist deviation and conservative sentiments also existed in the minds of a small number of cadres and workers. They held a passive attitude towards the promotion of the "four eight" overlapping operation. Some of the basic level management cadres talked about conditions. They claimed that coal seams were too thin and working faces too short for such a practice.

There were other cadres afraid of not being able to fulfill their tasks. Their position was that accidents might happen to electric conveyers and materials might not be supplied in time. Consequently, their working spirit was not strong and they were undetermined. There were also other cadres and engineering personnel who, upon seeing the fast action of the masses and their vigorousness, were afraid of things becoming muddled. They were afraid of their own shadows and reluctant to move forward. Some extreme individual cadres even declared that it was a lot of foolishness that sooner or later it would be changed back to three shifts.

Because of mixed-up ideologies and unclear understanding, the Party committee member of the mine repeatedly stressed the political and economic implications of the "four eight" overlapping operation. He criticized severely the small numbers of cadres for their fear of difficulties and their wavering sentiments. He also warned the cadres to be on guard against rightist deviation and conservative sentiments during the promotion of the "four eight" overlapping operation.

He also called upon the basic level cadres to struggle for top honors and for the upper reaches during the promotion of this advanced experience of the "four eight" overlapping operation.

At the same time, the Party committee member of the mine realized that the practice of the "four eight" overlapping operation was an important revolution in production management. He knew there were bound to be some difficulties and unexpected new problems. It was necessary, therefore, explain to the masses possible problems he foresaw. These included: how to guarantee the operation of electric conveyers with safety, hoisting at the main shaft, underground haulage, and the supply

of mine props at the working face. The staff and workers were asked to think of ways and devise plans.

At the same time, it was decided to initiate the practice and to solve problems that might arise as the situation might demand.

Through sound-offs and debates, clouded understanding was made clear, and rightist deviation ideologies were condemned. After seriously carrying out the three principles recommended by the Party committee member of no increase in manpower and equipment, definitely guaranteeing safety and quality, and improving production and efficiency, the "four eight" overlapping operation was put into practice throughout the entire mine by 19 October. As a result of the highly elated enthusiasm and full working spirit of the large staff and workers, production has risen steadily.

HYDRAULIC MINING DISTRICT OF HUA-CHIA-KANG
MINE VICTORIOUSLY ENTERS 1960

[The following is a translation of an extract from an article prepared by Wang Tsai-fa, Deputy Chief of the Hua-chia-kang Mine. This article appears in Mei-t'an Kung-yeh (Coal Industry), No 26, Peiping, 20 Nov 1959, page 28.]

The Hua-chia-kang No 1 Hydraulic Mining District of Huai-nan was turned over for actual production on 1 October 1958. Under the Party's leadership and the assistance of other brother units, the staff and workers of this district overcame the technical barriers of hydraulic mining in April of this year.

Since then, production has steadily risen. Take the third quarter as an example; average daily production in July was 1,144 metric tons; in August it went up to 1,255 tons; and in September it rose even higher to 1,336 tons. This was almost twice the average daily production of 750 tons called for by the Ministry of Coal Industry for working faces of hydraulic mines. By the second half of September, this mine had already victoriously stepped into 1960.

Production during this one year period has fully demonstrated the incomparable superiority of hydraulic coal mining. While staff and workers of the hydraulic mining district account for only 10 percent of the mine's total, its production is more than 40 percent of the mine's total.

Comparing dry mining with hydraulic mining in September, the cost per ton of coal in dry mining was over eight yuan, while that in hydraulic mining was only 2.7 yuan; mine timber consumption in dry mining was more than 23 cubic meters per 1,000 tons of coal produced, while

that in hydraulic mining was only a little over two cubic meters; and efficiency of mining workers in dry mining was seven tons per man-shift, while that in hydraulic mining was over 16 tons.

Of greater interest is the fact that there has not been a case of even light injuries since production was started in this district. The staff and workers have worked out a set of fast beats to praise hydraulic mining, wich goes like this: "Hydraulic mining is really good; cost is low and efficiency high; safety conditions are greatly improved and heavy labor liberated; coal walls tumble with the start of the water gun; the coal and water flow turbulently; the spirit of the hydraulic workers is really great; production doubled and merits achieved."

4

DEMONSTRATE THE SPIRIT OF COOPERATION;
GUARANTEE A STILL GREATER LEAP FORWARD

[This is a translation of a dispatch in Mei-t'an Kung-yeh (Coal Industry), No 27, Peiping, 30 November 1959, page 4.]

The four ministries of Railways, Communications, Metallurgical Work and Coal, and the Central People's Broadcasting Station recently staged a four department joint broadcasting conference for great cooperation. This conference called upon the staff and workers of the four departments to raise high and red banner of general line.

It further called upon staff and workers to increase the strength of communist great cooperation, to unearth fully production and transport potentials, to overfulfill ahead of schedule the 1959 leap forward plan of production and transport and to establish a favorable foundation for a continued big leap forward in 1960.

Coal shipments account for approximately 41 percent of the railways' transport volume. These shipments also account for definite percentages in vehicular and marine transport volumes. The development of iron and steel and other industrial and agricultural production as well as consumer needs are closely related to whether coal produced in various areas can be shipped out according to plan.

Because of the vigorous cooperation between railways and mines, between railways and ports, and between railways and plants, great potentials have been unearthed during 1959. Because of the shortening of freight car turn-around time, a force equivalent to 24,000 transport cars was unearthed by China's railways. About 75 percent of this was achieved by strengthening socialist great cooperation.

On the foundation of learning the experiences of Fou-hsin's rail mine cooperation and Pen-ch'i's rail-plant cooperation, the port of Ch'in-huang-tao put into

practice a through transport great cooperation.

The amount of transport potential unearthed during the second quarter of 1959 alone, through the shortening of stoppage time of cars and ships at the port, was equivalent to an increase of one 7,200 ton vessel. This was enough to ship 180,000 more tons of coal between Shanghai and Ch'in-wang-tao.

The coal mines of China seriously promoted the experience of Fou-hsin's rail-mine cooperation and launched jointly with the railways a "high quality, high production, more shipment, and fast shipment" red banner emulation movement, with strengthening of rail-mine cooperation as the focal point.

By the same token, they took a firm hold on constructing simple coal bins and carried out extensive technical innovations to improve loading efficiency. For instance, the Hsi-ming mine of Shansi's Hsi-shan Mining Administration, created a centrifugal type of loading machine for covered cars, 32 times more efficient than manual loading. These measures had an important role in improving the railway freight car turn-around rate.

Representatives from 64 advanced organizations of the railway, communications, metallurgical and coal systems participating at the national conference deeply realized the meaning of "raising efficiency through cooperation" and of "cooperation is strength" in their actual work. They felt that the range of cooperation must be expanded.

Consequently, they made joint proposals at the conference. The proposals were concerned with the further strengthening of socialist great cooperation. They called upon the staff and workers of the railway, communications, metallurgical and coal systems to persist in political leadership, to thoroughly oppose rightist deviation to build up efforts, to thoroughly carry out the Party's general line for socialist construction, to carry out mass movements extensively, to carry out socialist great cooperation in a big way, to produce even more and better iron, steel, and coal, to fulfill even more transport tasks, and to guarantee the realization of the goals of "more coal production, more coal shipments, not storing produced coal on the ground, and no shortage of food [coal?] for iron and steel."

Both PO I-po, Vice Premier of the State Council, and LI Chieh-po, Vice Chairman of the All-China Federation of Trade Unions, issued important directives (to be published separately) at the conference. Talks were also given by Vice Minister YU Kuang-sheng of the Ministry of Railways, Vice Minister MA Hui-chih of the Ministry of Communications, Vice Minister YUAN Pao-hua of the Ministry of Metallurgical Industries and Vice Minister CHAO Tzu-shang of our [coal] Ministry (all to be published separately). They unanimously called upon the staff and workers of the four systems to oppose rightist deviation, build up efforts, carry out cooperation in a big way, improve ideological levels, raise political awakening and, on the basis of the spirit of the general line of socialist construction, to produce greater and more outstanding results.

Representatives of many basic units of the four systems reacted enthusiastically to the joint proposals for the further strengthening of great socialist cooperation. Party Committee Deputy Secretary LI Lieh of the Transport Department of the Fu-shun Mining Administration pledged at the conference that the single operational time of railway cars during the first quarter of 1960 would be further reduced by 26.7 percent from that of the third quarter of 1959. He said the mine car turn-around rate would be raised by 20 percent.

CHANG Chia-lu, Chief of the Transport Department of Fou-hsin Mining Administration, guaranteed that the single operational time of freight cars in the first quarter of 1960 will be reduced to 5.5 hours, the net loading weight would be increased to 42.5 metric tons, percentage of through trains would be increased by 6.4 percent over its percentage in the third quarter of 1959, and the turn-around rate of mine cars would be improved by 21.2 percent over the rate of the third quarter of 1959.

Party Committee Deputy Secretary HO Yu-pao of the Ta-t'ung Mining Administration guaranteed that the single operational time of freight cars in the first quarter of 1960 would be reduced to 6.1 hours. He said the net loading weight would be increased eight percent over that of the third quarter of 1959.

In addition, 11 persons, including Director WANG Kuang-wen of the Mukden Railway Administrative Bureau, Party Committee Deputy Secretary HU Kuo-chung of the Transport

Department of An-shan Iron and Steel Company, and Director WANG ho of Hopeh Province Communications Office also submitted their conditions of guaranteeing the carrying out of the proposals.

Vice Minister LU Cheng-ts'ao of the Ministry of Railways finally proposed that different railway bureaus, ports, plants, mines and enterprises should immediately work out concrete targets on the basis of proposals made by the representative of the advanced group, and through joint negotiations with ports and railway stations. He recommended that they adopt effective measures, and also jointly endeavor and jointly guarantee the realization of targets.

JOINT PROPOSAL BY THE ADVANCED
GROUP REPRESENTATIVES OF CHINA'S
RAILWAY, COMMUNICATIONS, METALLURGICAL
AND COAL MINE SYSTEMS FOR FURTHER
STRENGTHENING GREAT SOCIALIST COOPERATION

[This is a full translation of an article in Mei-t'an Kung-yeh (Coal Industry), No 27, Peiping, 30 November 1959, pages 6-7.]

Gloriously entrusted by staff comrades and workers of their own systems, 64 representatives of the nation's railways, communications organizations, metallurgical enterprises, and coal mines attended the national "heroes" conference and listened to intimate directives of leading comrades of the Party and the state.

As a result, they recognized the current splendid state of affairs, clearly understood the concrete tasks of the present and future, realised their ideological thinking, and strengthened their confidence.

During the conference, they reported in detail glorious achievements in strengthening socialist cooperation during the big leap forward. Through the exchange of experiences, they realized the important meaning of "raising efficiency through cooperation" and "cooperation is strength". They are determined to strengthen socialist cooperation in their future work.

The experiences of Fou-hsin, Pen-ch'i and Ch'in-wang-tao in rail-mine, rail-plant and rail-port cooperation respectively, and of Ch'ang-li Hsien in the great "non-delaying" cooperation of production, shipment and marketing, have been rapidly promoted all over China since the big leap forward. As a result, the turn-around rate of trains and ships has been greatly accelerated, and production of mines and plants has been pushed ahead.

Between August 1958 and October 1959, the equivalent of 24,000 freight cars was made available by the nation's railways as a result of shortening freight car turn-around time. Approximately three fourth of this potential was

obtained through the strengthening of great socialist cooperation.

After the practice of great "non-delaying" transport cooperation by the port of Ch'in-wang-tao, average stoppage days per ton of shipping during the second quarter of 1959 was 48 percent less than the first quarter. This reduction was equivalent to the addition of a 7,200 ton vessel during the entire quarter, sufficient to transport over 180,000 more tons of coal between Ch'in-wang-tao and Shanghai. These facts prove that the strengthening of enterprise cooperation will create a new and greater production force.

The Party and the state have now issued to us the call of battle. They have stated that the urgent tasks now facing staff comrades and workers on the battle fronts of industry, communications, transport, and capital construction are to fight for overfulfillment ahead of time of the state plan for 1959, and to make all necessary preparations for continued leaping forward in 1960.

Our entire staff and workers of railway, communications, metallurgical and coal mine systems must persist with political leadership, thoroughly oppose rightist deviation, build up efforts, thoroughly carry out the Party's general line for socialist construction, carry out extensive mass movements and socialist cooperation, produce even greater amounts of iron, steel and coal, fulfill even more transport tasks, and achieve the goals of "more coal production," "more coal shipments," "no storage of produced coal on the ground." and "no shortage of food for iron and steel." We respectfully submit to the entire staff and workers of the railway, communications, metallurgical and coal mine systems the following proposals:

To further strengthen the great cooperation between railway, communications, metallurgical and coal mine systems; to fight to reduce by 20 percent or more the single operational time of railway freight cars during the first quarter of 1960 over that of the third quarter of 1960; to raise the freight car net loading weights of coal, iron and steel by more than seven percent; the percentage of through transport of coal is to be over 50 percent.

Port stoppage time of vessels is to be reduced by more than 20 percent; the percentage of direct loading between cars and ships is to be raised by more than 10 percent.

The monthly tonnage production [carrying volume] of highway public automobiles and of automobiles of organizations and enterprises is to be increased more than 25 percent.

The operating load of locomotives inside steel plants is to be raised by over 200 metric tons per locomotive per day; the turn-around time of rail cars inside plants is to be reduced more than 20 percent.

The utilization rate of locomotives and rail cars of coal mines is to be improved more than 20 percent. To accomplish this, we must:

1. Practise the policy of "regarding a coal shipment as the principle supporting agriculture, guaranteeing key points, and coordinating overall arrangements;" reduce stoppage time of rail cars and ships by every method available; unearth transport potentials; and guarantee the fulfillment of transport tasks. In the transport of coal, we should seriously practise the principle of "outside first and inside later."

2. Continue to promote vigorously the experiences of Fou-hsin, Pen-ch'i and Ch'in-wang-tao in rail-mine, rail-plant and rail-port cooperation, and demonstrate the communist style of "keeping difficulties to ourselves and giving conveniences to others;" comprehensively utilize various types of transport tools, organize multi-types and multi-forms of "non-delaying" transportation lines, and further strengthen the organizational work of rail transport and domestic transport of mines and plants; speed up the movement of rail cars, ships and freight; actively support and promote the experiences of Ch'ang-li Hsien by organizing great "non-delaying" cooperation between production, transport and marketing, and of Li-ch'eng Hsien by organizing short haul transport cooperation, and strengthening the great cooperation between trunkline transport and short haul transport.

3. Carry out extensive technical innovations and technical revolution: thoroughly carry out the policy of

combining foreign and native methods; innovation of loading and unloading tools and equipment on the basis of local conditions and the types of freight handled; carry out technical innovations on various types of existing civilian transport tools; carry out large scale construction of simple coal storage bins and facilities to hold freight on low levels; construct and expand material storage yards; and vigorously develop loading and unloading mechanization and semi-mechanization. Build up efforts, triumph over severe cold weather, actively strengthen anti-freezing measures for wet cargoes such as washed coal and ores, and improve loading and unloading efficiency.

4. Conscientiously carry out the policy of safe production and safe transport; strengthen technical management and safety education; strictly carry out operating procedure and rules; eliminate rail car and ship movement accidents, and human injury and death accidents.

5. Based on the spirit of further strengthening the great cooperation, we propose to the various railway bureaus, railway stations, mining administrations, port authorities, and high-way transport departments that they jointly work out, on the basis of these proposed targets, their own concrete targets of joint struggle for the shortening of single operational time of railway freight cars, for the increase of net loads of freight cars, for the acceleration of the turn-around of freight cars inside mines and plants, for the improvement of locomotive utilization efficiency inside mines and plants, for the shortening of stoppage time of vessels in ports, and for the improvement of efficiency in port operations. We urge them also, submit active measures to guarantee the realization of these targets.

FOURTEEN RAIL-STATION-AND-MINE
UNITS GLORIOUSLY ACQUIRE RED
BANNERS FOR COOPERATION

[This is a full translation of a dispatch from Mei-t'an Kung-yeh (Coal Industry), No 27, Peiping, 30 November 1959, page 14.]

The Ministry of Railways, the Ministry of the Coal Industry, the National Committee of the Railway Workers Union and the National Committee of the Coal Mine Workers Union jointly called a telephone conference on 21 November 1959. They made a summarizing appraisal of the red banner emulation movement for "high quality, high production, more shipments and fast shipments" implemented during the third quarter by the coal mines and carloading stations of the entire country. A total of 14 units, including the unit of the Fou-hsin Mining Administration and the Fou-hsin railway station, gloriously acquired red banners for cooperation.

Comrade YU Kuang-sheng, Vice-Minister of the Ministry of Railways, on behalf of the two ministries of railways and the coal industry, and the national committees of the railway and coal mine workers unions, made the concluding appraisal. He first pointed out that, under the encouragement of the spirit of the Eighth Plenary Session of the Eighth Central Committee, this emulation movement showed extremely lively activities. An overall picture of "joyously travelling toward glory" appeared in coal production and railway transport.

The coal mines of the country completed ahead of time the third quarter production plans for run-of-mine coal, increasing production by 4,120,000 metric tons for the state. During the third quarter the railways shipped a total of 1,180,000 carloads of coal, or more than 51,100,000 tons, which was about 2,000,000 tons more the second quarter. In addition, 13 large scale simple coal storage bins and mechanized coal storage capacity of more than 140,000 tons were completed during the third quarter.

Based on the statistics of 19 key point station-mines, single operational time during the third quarter was 8.89 hours (0.22 hours shorter than the second quarter). The average net loading weight of coal cars in the whole country reached 43.3 metric tons (0.7 tons higher than the second quarter). Through train shipments of coal originating from the coal mines of all China already accounted for 42.4 percent of the total carloading volume of coal during the third quarter. The transporting force saved from these three items alone was equivalent to the use of 157,600 cars, or an average daily increase of 1,716 pieces of rolling stock, sufficient to ship out 2,730,000 more tons of coal.

Vice Minister YU announced during the conference the list of red banner emulation winning units for "high quality, high production, more shipments and fast shipments." These units are the Fou-hsin Mining Administration and the Fou-hsin railway station, the Ching-hsi Mining Administration and the Men-t'ou-kou Central Station, the Pei-p'iao Mining administration and the two railway stations of Pei-p'iao and Lo-t'o-ying, the Fang-tzu coal mine and the Feng-tzu railway station, the Chiao-tso Mining Administration and the Chiao-tso railway station, the Hsi-shan Mining Administration and the Yu-men-kou railway station, the Tzu-po Mining Administration and the Chang-tien railway administrative section, the Feng-feng Mining Administration and the Feng-feng, Ho-ts'un and Hsin-p'o railway stations, the Hao-pi Mining Administration and the Hao-pi railway station, the P'ing-hsiang Mining Administration and the P'ing-hsiang railway station, the Ta-t'ung Mining Administration and the K'ou-ch'uan railway station, the P'ing-ting-shan Mining Administration and the Shen-lou railway station, the I-ma Mining Administration and the I-ma railway station, and the Hsin-mi Mining Administration and the Mi-hsien railway station.

Vice Minister YU submitted six requirements to the staff and workers of the railways and the mines:

1. Continue to oppose rightist deviation; build up efforts; guarantee the fulfillment of coal transport plans with a thousand ways and a hundred plans; integrate car movement and coal movement; consider not only the economic use of the coal cars, but also guarantee coal loading according to plan; staff and workers of railways and

mines must further strengthen their cooperation and continue to increase the practice of comprehensive planning of transport.

2. Respond to the proposals made by the advanced group representatives of the railway, communications, metallurgical and coal mine systems on the strengthening of cooperation. The single operational time must be further reduced by 20 percent or more, the net coal load raised seven percent or more, through train shipments of coal should reach more than 50 percent, and the utilization efficiency of locomotives and cars at the coal mines must be improved by 20 percent or more.

The organizational work of transportation is to be improved. The loading and unloading of cars should be controlled and many red banner trains and red banner through trains should be dispatched. There should be more planning of scheduled loading of large coal cars at definite locations, running on definite lines. Planned arrangements should be carried out as often as possible.

The number of cars with lowsides entering mines should be reduced. Balanced dispatch of cars and fast loading and unloading should be organized.

3. Short haul transportation of coal should be accomplished rapidly.

4. There should be large scale construction of coal storage bins, and greatly increased mechanization of loading and unloading. There should be a great determination to mobilize the masses and to turn into reality, by the end of 1959, the slogan of "three days without car, production as usual; three days without production, loading continues."

5. The weather has already turned cold and in the north-east regions the phenomenon of frozen wet coal has already affected unloading. Drying equipment should be checked and the work of ice prevention by the adding of oil should be inspected.

6. Under the leadership of local Party committee members, all railways and coal mines must strengthen their control of coal loading and unloading and the work of

unloading supplies from arriving cars. Any shortage of loading and unloading forces should be remedied immediately.

Representatives of the Bureau of the Coal Industry and Cheng-chou Railway Bureau of Honan Province, the Yang-ch'uan Mining Administration and Yang-ch'uan railway station, the K'ai-luan Coal Mines General Administrative Office and Ku-yeh railway station, and the Hao-kang Mining Administration and Hao-kang railway station all expressed, during the conference, their will to cooperate with the railway, communications, metallurgical and coal mine systems.

They will continue to oppose to the end any rightist deviation, build up their efforts and push the red banner emulation movement for "high quality, high production, more shipments and fast shipments" to a new high tide. The representatives of the Bureau of the Coal Industry and Cheng-chou Railway Bureau of Honan Province also said that the single operational time will be reduced by 30 percent and 35 simple coal storage bins and mechanized coal yards will be constructed by the end of 1959.

Finally, Vice-Minister CHAO Tzu-shang of the Ministry of the Coal Industry gave a talk at the conference. He asked the advanced to become even more advanced, and the ones behind to catch up. He called for great technical innovations and large scale construction of simple coal storage bins and mechanized coal yards.

The coal mines must voluntarily cooperate with the railways and treat the active reduction of single operational time and improvement of transport efficiency as their own duty. The large coal mines not only must secure red banners in coal production, but they must also secure red banners for rail-mine cooperation.

GREAT VITALITY OF SMALL SCALE COAL MINES

(Report on Second National Work Conference
of Small Scale Coal Mines)

[This is a complete translation of an article in Mei-t'an Kung-veh (Coal Industry), No 27, Peiping, 30 November 1959, pages 20-21 by its own reporter.]

Party's Extremely Thoughtful Concern Over Small Scale Coal Mines

The Second National Work Conference of Small Coal Mines has triumphantly adjourned. Gigantic results have been achieved through this conference which last about 10 days. Direction has been clearly defined, policy has been clearly grasped, understanding has been unified, ideology has been raised, and technical and administrative standards have been improved.

Why was this conference able to achieve such great victories? The reason may be described in one phrase: the Party leadership's extremely thoughtful concern over small scale coal mines.

Under the direction of the Party's policy of "walking on two legs," an impressive mass movement of coal mining development by the entire people was stirred up in 1958. More than 100,000 small scale mine shafts appeared all over China. Since the recommendation of the policy of "overall reconstruction and key point improvement" by the Pao-feng conference and the carrying out of the "five fixings" [fixing location, form, personnel, organization and leadership] many small scale mine shafts have started to change from small to large, and from native to foreign.

They have been gradually reconstructed into combination native and foreign shafts. Production and efficiency have improved noticeably. Anticipating the imminent arrival of 1960, and under the new situation of speeding up realization of rural "four movements" with agriculture as the foundation, this conference was called. The direction

of continually carrying out "overall reconstruction and key point improvement" has been clearly defined. These have been the step by step ways the Party showed its concern over the growth and strengthening of small scale coal mines. The small scale coal mines have fought one outstanding battle after another under the correct leadership of the Party.

The representatives will never forget November 25, 1959. On that day, leaders of the Party and the state, comrades CHU Teh, HO Lung, T'AN Chen-lin, PO I-po and NIEH Jung-chen received the entire group of representatives, and pictures were taken with the representatives. How could the representatives help but feel happy and be moved by the event?

The extremely thoughtful concern of the Party over small coal mines has brought the representatives unspeakable happiness and great encouragement. Happiness and encouragement in the hearts of the representatives have produced a gigantic force.

Small Scale Coal Mines Are Possessed With A Strong Vitality.

Achievements accomplished by the small coal mines since the big leap forward of 1958 were reported during the conference. Discussed also were the merits of continued practice of the policy of "over-all reconstruction and key point improvement." Gigantic achievements and glorious future exemplify the strong vitality of small scale coal mines.

During China's mass movement of coal mining development in 1958, a brand new situation of small coal mines like "stars over the sky and flowers blooming everywhere" emerged. When HSU Chih-chen, Vice Chairman of the All-China Federation of Trade Unions spoke of this situation of great and rapid development in his report, he excitedly described it as truly like "the breeze of a sudden spring wind in the night and the blossoms of thousands and ten thousands of pear trees in bloom."

The establishment of large numbers of "small, native, group" types of mine shafts is not what the rightist deviation opportunists claim as being "small coal pits without much coal production, destroying the coal fields and a gain not compensated by the loss." On the contrary, they produce a lot of coal, they have developed very healthily, and they have contributed greatly to socialism.

In 1958 these "small, native, group" mines produced more than 51,000,000 tons of coal, representing 19 percent of China's coal production, 42.5 percent of the production of local coal mines, and the equivalent of 80 percent of China's total increase of coal production during the first Five-Year Plan period. Through "overall reconstruction and key point improvement" in 1959, both production and efficiency have greatly improved.

In addition, cost of production has decreased noticeably, even though the labor force employed in these small coal mines is smaller than before. Based on the statistics of seven provinces (autonomous regions) including Honan, Anhwei, Shantung, Kwangtung and Kwangsi, 698 mines were reconstructed during the period from January through October 1959. Their annual production capacity was increased from 12,044,000 metric tons prior to their reconstruction to 25,880,000 tons, an increase of 114.8 percent.

The daily production of the T'ung-hsing coal mine in Yung-ch'uan Hsien of Szechuan Province was only 40 tons during 1958's great iron and steel development. Its efficiency in terms of total personnel was less than 0.2 tons per man-shift. Through technical reconstruction and the practice of mechanization, daily production has been raised to 110 tons, efficiency improved to 0.6 tons and the cost of each ton of coal is only 2.94 yuan.

The continuously prosperous development of small scale coal mines has not been completely without significance and position as the rightist deviation opportunists have described. On the contrary, it represents an over-all improvement and is capable of great things. It has an unlimited future and it occupies an important position in national economy.

Actual experience has proved that, in the coal industry and in the entire national economy, the small scale coal mines are increasingly demonstrating their importance. They basically satisfy the requirements of small blast furnace iron smelting, scattered types of local industries, agriculture, and civilian uses.

They have enlivened rural economy and built a preliminary foundation for a further development of the coal industry in the coal shortage areas of the south. A small scale coal mine is not some kind of "wrapper." It is "one leg" of the coal industry in its carrying out of the policy of "walking on two legs."

The representative of Kansu Province said: "High speed development of the coal industry is not possible without the leg represented by the small scale coal mines." Of the total coal production of Kansu Province in 1958, 71 percent was produced by small scale coal mines. This guaranteed the needs of the iron and steel industry, local industries, and civilian uses.

The coal production value of Shan-hsien, Honan Province in 1958 represented 25 percent of its gross production value. Of the industrial profit of 760,000 yuan 68.5 percent was from coal. As a result of the accumulation of funds through the development of coal mines, many hsien and communes have started fertilizer plants, paper making plants, brick and tile factories, lime kilns, and farm tool plants.

They have also purchased tractors, automobiles, new farm tools, water pumps, motors, lathes and drilling machines. They have built highways, constructed dining halls and residence quarters, bought broadcasting equipment and telephones, and installed electric lights. These projects have greatly enlivened rural economy and improved the standards of living of the farmers.

The foundation of the coal industry in provinces such as Hunan, Hupeh, Kwangtung, Kwangsi, Fukien, Chekiang, Yunnan and Kwei-chow used to be comparatively weak. They produced only 9,000,000 tons of coal in 1957. The entire population was mobilized to develop coal mines in the big leap forward year of 1958. Coal production was thereby raised to 35,780,000 tons, representing a steep

increase of three times. Coal is now produced in every Chinese province and municipality except Shanghai.

Minister CHANG Shen-chih, in his report, particularly emphasized that small scale coal mines should shoulder the task of developing comprehensive utilization of coal. Many small scale coal mines have already achieved important results in this field, and have accumulated some rich experiences. For example, Hung-ch'uan Coal Mine of Tzu-ch'ang Hsien in Shensi extracted gasoline, kerosene, light oil, heavy oil and diesel oil from coal by native methods. This not only increased the income of the province, but also solved the kerosene lighting requirements of neighboring masses.

Small scale coal mines must be developed and improved. They must be improved in their development and developed in their improvement. Small scale coal mines have a strong vitality and an unlimited future.

Carrying Out the Overall Technical Reconstruction of Small Scale Coal Mines.

T'ung-hsing Coal Mine of Yung-ch'uan Hsien, Szechwan, created "nine natives" [native hoist, native fan, native water pump, native automatic ventilation gate, native coal unloading platform, native coal screens, native coal crusher, native detonators and native explosives] and "ten modernizations" [hoists for hoisting, blowers for ventilation, native batteries for lighting, rails for haulage, "so-tou" for coal haulage out of the working faces, screens for coal dressing, wooden troughs for coal washing, automatic dumpers for coal cars, heavy chisels for coal extraction, and automatic gates for ventilation];

Ch'e-chia-chuan Coal Mine of Hsing-hsien, Shansi has produced safely for 20 years;

Bamboo and wooden structure haulage automation of the Pai-shan Coal Mine in I-hsing Hsien of Kiangsu;

The wooden hand operated water pump of Ch'ang-chia-yu Coal Mine in Feng-hsien, Honan with a lift of 15 meters and a capacity of 9 tons per hour;

The endless rope, automatic coal haulage of short-wall coal mining working faces of Ch'a-lu-ho Coal Mine, Chang-i Shih, Kansu Province;

The 145 tons of coal output of the Ho Ting-chung hand-pick mining shift of Hua-yin Coal Mine in Chiang-yu Special District of Szechwan.

These are the "secret weapons" of the small scale coal mines. They demonstrate the unlimited power of diligent and economical coal mining development, self-survival, safe production as well as technical innovations and technical revolution. They prove that coal mines can be started from nothing, reconstruction can be carried out by native methods, and a big leap forward can be made by small mines. They have opened a road for the technical reconstruction of small scale coal mines.

These advanced experiences have been momentous creations by the masses under the leadership of the Party. Facts prove that the masses are the fountains of all forces. Nothing can be accomplished without the masses. The Party is the soul of all developments and, without the Party, there is no victory.

Advanced experience exchange meetings covering more than ten different subjects including enterprise management, safe production, animal hoisting, motive power hoisting, and lighting were arranged by the conference. These widely implemented "treasure presenting and 'bible' seeking" activities greatly satisfied the wishes of the representatives.

Through these wide experience exchanging activities, the conference solemnly recommended 60 advanced experiences covering 15 different categories. These will be the major direction of attack in the technical reconstruction of small scale coal mines.

The conference asked all small scale coal mines to promote these 60 advanced experiences which covered 15 different categories. It called for an intensive mobilization of the masses and a rapid implementation under the Party's leadership of a "four comparison" [production, labor efficiency, cost and safety] red banner

emulation movement centering upon the "five improvements" [method of development, method of coal mining, tools and equipment, labor conditions, and surface transportation].

This recommendation was enthusiastically supported by all representatives. They submitted, during the conference, their proposals and guaranteed conditions for the emulation movement.

In addition, they unanimously expressed their determination to continue to practice the policy of "overall reconstruction and key point improvement," to rapidly stir up a "four comparison" red banner emulation movement centering upon the "five improvements," to carry out the overall technical reconstruction of small scale coal mines, and to guarantee continued high production in the coal industry. An imposing technical reconstruction movement, affecting all small scale coal mines of hsiang and communes throughout China, has begun!

CONTINUED HIGH SPEED DEVELOPMENT OF THE COAL
INDUSTRY THROUGH VIGOROUS IMPLEMENTATION OF THE
"FOUR COMPARISON" RED BANNER EMULATION MOVEMENT
CENTERING UPON "FIVE IMPROVEMENTS"

[This is a translation of extracts from an article in Mei-t'an Kung-yeh (Coal Industry), No 28, 29, Peiping, 20 December 1959, pages 11-13, 16.]

A. Current State of Affairs of the Overall Leap Forward and News of Victory on all Fronts

Our current state of affairs is extremely good! It is an ascending and prosperous state of affairs continuing the big leap forward. Since the Eighth Plenary Session of the Eighth Central Committee of the Party issued the battle call in August to oppose rightist deviation, to build up efforts, and to stir up a new high tide of "increase production and practice economy," a new and booming large scale mass movement has begun all over China.

This movement has developed rapidly and widely. It is not only impressive but also realistic. Great results have been achieved within a very short period of time.

On the industrial front, up to the end of October, the production of 42 important industrial products, including steel, pig iron, mine run coal, power, crude oil, synthetic rubber, mining equipment, generating equipment, powered machinery and metal cutting machine tools had already exceeded their total output of the big leap forward year of 1958.

The gross industrial production value for the months of January through October was 48.9 percent higher than the same period of 1958. It is estimated that the value for the whole year of 1959 will be 37 percent higher than 1958. According to present estimates, all tasks of industrial production will be overfulfilled.

On the agricultural front, the year of 1959 has seen the worst damage by flood, drought, wind, insects, etc., in scores of years, with an afflicted area over 500 million mou.

This is almost a third of the total cultivated land in China. Nevertheless, a rich harvest has been achieved through the strengthening of people's communes, further demonstration of their superiority, and through the heroic and unconquerable spirit of the peasants, who in spite of many setbacks, continued their stubborn fight against the various perils of nature.

Our preliminary estimate is that production of foodgrains and cotton in 1959 will be approximately 10 percent higher than 1958. Considering the production increase in foodgrains and cotton and of great developments in agriculture, forestry, animal husbandry, fishery, and their subsidiary businesses the gross agricultural production value in 1959 will definitely be more than 10 percent higher than 1958.

On the capital construction front, it is estimated that projected total investment in 1959 and projected construction of units both over the quota and below the quota will be overfulfilled.

On the transport front, tasks have also been overfulfilled as a result of the leap forward in industry and agriculture, and through a great increase in transport volume. Because of the implementation of mass movements in September and October, there also will be a very great increase in the short haul transport volume in 1959.

On the business front, both buying and selling have prospered and a new thriving picture has appeared on domestic markets. The supply of certain commodities was somewhat tight in the spring, consisting principally of shortages of vegetables and meats.

Under the Party's leadership and through efforts by the entire people, the situation has improved. For the period of January through September 1959, the total amount of commodities procured was 42 percent higher than during the same period of 1958. Retail of social commodities was 16 percent higher, and the latitude of this increase was also wider than 1958.

Because of the rapid increase in total procurement, warehouse storage of commodities has been further

fortified. By the end of September [1959], the total commodity storage of commercial departments was 22 percent higher than at the same time of 1958.

This state of affairs clearly shows that the people of China, under the leadership of the Party, have swept away the cold air blown by rightist deviation and opportunistic elements during the previous period and have created a brand new situation of the new big leap forward.

B. A New Production High Tide of Daily "red" and Overall "Red" Begun in China's Coal Mines

During the continued big leap forward of China's national economy, glorious achievements have also been made by the coal industry. Production of mine run coal for the period of January through the first ten days of November 1959 reached 306,907,000 metric tons, 13.6 percent higher than the total output of 270 million tons of 1958.

Of this total, 187,705,000 tons were produced by enterprises directly under the Ministry and decentralized enterprises, and 119,202,000 tons were produced by local enterprises, an increase of 19 and 7 percent respectively over corresponding production in 1958. It is estimated that China's mine run coal production task of 335,000,000 tons will be completed 15-20 days ahead of time.

In coal washing, 14,740,000 metric tons of washed coal were produced during the period of January through the first 10 days of November, an increase of 23 percent over the 11,960,000 tons produced during the same period of 1958.

Important results have also been achieved by the coal industry in the work of capital construction. The projected capacity of mine shafts either started or under construction during the period of January through October [1959] reached 215,150,000 tons, an increase of 78 percent over the same period of 1958. The projected production capacity of mine shafts entering into actual production during this period was 25,350,000 metric tons, an increase of 25 percent over the same period in 1958. It is

estimated that the 1959 tasks of mine shaft and coal washing plant construction and their transfer for actual production will be completed 10-15 days ahead of time.

Since the month of August the staff and workers of China's coal mines have enthusiastically responded to the call of the Eighth Plenary Session of the Eight Central Committee of the Party. An imposing "increase production and practise economy" movement has started and a new production high tide has formed rapidly. Efforts of everyone have been sky-rocketing and the spirit of every individual aroused. News of production victories has been flying and coal output has risen step by step.

Although there was a great deal of rain during the month of August in the major mining districts of the northeast and North China, the large staff and workers, with a spirit of "man conquering nature," were able to triumph over floods. The coal production of China in that month was 11.8 percent higher than that of July.

Production in September rose another 24.6 percent over the month of August and the third quarter plan was completed two days in advance. On the foundation of these triumphs, the spirit of the entire coal mining staff and workers rose to a peak and they continued to march forward. As a result, China's coal output in October was another 3.9 percent higher than that of September.

For a long time, the phenomenon of "six slackenings and six tightenings" existed in the production of the coal industry. This means slackening at the beginning of the year, tightening at the end, slackening at the beginning of a quarter, tightening at the end of the quarter, slackening at the beginning of a month and tightening at the end of the month, slackening after a holiday and tightening before it, slackening during the night shifts and tightening during the day shifts, and slackening at the start of a shift and tightening at the end of the shift.

Many comrades considered this phenomenon an unchangeable "objective rule." However, during the high tide of the increase production and practise economy "movement, this historical habit of "six slackenings and six tightenings" was shattered and a brand new situation of daily "red"

and overall "red" emerged. This situation has never been seen before in the history of the coal industry.

At the same time, the fruit of this production high tide is "a double harvest in both coal extracting and advancing work." The condition that advancing work and the work of removing overburdens cannot follow the rise of production has already been changed, and even a larger number of coal working faces than needed has already been prepared! This situation forecasts a continued and healthy development of coal production.

C. Small Scale Coal Mines Demonstrate Power and Contribute Meritorious Service

A beacon has pointed out a road for the rapid development of small scale coal mines. Like the other battle fronts of the coal industry, the work of the small scale coal mines during the past year has also been one victory after another, and they have continued to march forward with the big leap forward step.

Considering steel to be the basis of the overall big leap forward of national economy, the coal industry determinedly carried out in 1958 the complete sets of "walking on two legs" policies recommended by the Party Central Committee and Comrade MAO Tze-tung. This stirred up an overpowering and impressive mass movement of coal mining development by the entire people.

Under the leadership of Party committee members, and with the Party secretaries taking the lead, and the entire people taking part, an army of "ten thousand strong" was organized to look for coal in the mountains and to mine the coal. A brand new situation of "stars lining the sky and flowers blooming everywhere" appeared. More than 51,000,000 metric tons of coal were produced, accounting for 19 percent of China's total coal production and 42.5 percent of the output of local coal mines.

Moreover, a large proportion of these small coal mines were distributed in the coal shortage areas of the south. For example, the coal industries of the provinces and regions of Hunan, Hupeh, Kwangtung, Kwangsi, Fukien,

Chekiang, Yunnan and Kweichow were comparatively weak. In 1957 they produced only 9,000,000 metric tons of coal, but in 1958 they produced 35,780,000 tons, a three-fold increase. Not only were the requirements of small blast furnace iron smelting, scattered local industries, agriculture and civilian needs basically satisfied, but a preliminary foundation was also established for the further development of the coal industry in the coal shortage areas of the south.

These are the results of the coal industry having thoroughly carried out the policy of "walking on two legs" of "large foreign groups" and of "small native groups." Toward the economic industrialization of China's socialist state, the small scale coal mines have contributed meritorious service.

D. Small Scale Coal Mines Start On The Road To Normal And Healthy Development

During the mass movement of coal mining development by the entire populace in order that experiences could be exchanged immediately and the small scale coal mines continue their upward development, an on-the-spot conference of coal mining development for the entire populace was called by the Ministry at Pao-feng Hsien, Honan Province in October 1958.

Based on the requirements of the Party's general line, the policy of "overall reconstruction and key point improvement" was recommended. The purpose, objective, methods and requirements of technical reconstruction were also clearly defined. Actual experience during 1959 has proved that this policy conforms to the actual conditions of the coal industry.

Under the direct leadership of Party committee members, and on the foundation of 1958's big development, the "five determinations", the work of determining location, structure, personnel, organization and leadership, have been carried out on small scale coal mines in many areas. This was done on the basis of the distribution of iron and steel industries, and the coal requirements of local industries and agriculture and people's daily living.

Following the spirit of "overall reconstruction and key point improvement," technical reconstruction work has been carried out on small scale coal mines which had rich resources, better quality coal, a better future for development, and easy access to communications and transportation.

1. Production increasing in multiples, efficiency continuously doubling, and labor forces greatly and selectively reduced:

In a year (1959) of organization and work improvement, some of the small coal mines have either been amalgamated or eliminated. Although the number of mine shafts has been reduced, output and efficiency have greatly improved and labor forces have been greatly and selectively reduced.

Base on current preliminary statistics, the number of small scale coal mines in China has been reduced from more than 100,000 in 1958 to 15,000 at present. In addition, the labor forces employed have been reduced from close to three million people in 1958 to around 1,200,000 at present (1959).

Although the number of mines has been greatly reduced, production from these small scale coal mines in 1959 exceeded the production level of 1958. This is an important result of the "five determinations" and technical reconstruction. For instance, at the beginning of 1959, there were 1,413 pairs of small scale mine shafts in Shantung Province with a labor force of 545,000 people and a daily output of 8,532 metric tons.

After reorganization and reconstruction, Shantung Province's present mine shafts numbered 1959 pairs, with a labor force of 71,000 people and yet the average daily output in October was 15,800 tons. By September, staff and workers of small scale coal mines in Anhwei Province had been reduced from the 196,000 people during the fourth quarter of 1958 to only 26,000 people.

The number of mine shafts had been stabilized at 107 pairs as compared to 1,475 pairs in 1958 and yet production had reached 849,000 tons, an increase of 5.9 times over the same period [probably January through September]

of 1958 and an increase of 1.8 times over the total output of small scale coal mines in the big leap forward year of 1958.

As a result of technical reconstruction, many small scale coal mines have increased in size, and have gradually changed from manual operations to semi-mechanized or mechanized production uniting foreign and native methods. Their production and efficiency have continuously improved, and costs have decreased on a wide latitude.

Based on statistics of the seven provinces and autonomous regions of Hunan, Honan, Anhwei, Shantung, Shansi, Kwangtung and Kwangsi, 698 mines were reconstructed during the period of January through October 1959 and their total annual production capacity was increased from 12,044,000 metric tons prior to reconstruction to 25,880,000 tons, an increase of 114.8 percent.

The daily output of the T'ung-hsing Coal Mine in Yung-ch'uan Hsien of Szechwan Province was only 40 tons during the big iron and steel development of 1958. Its efficiency in terms of total personnel was not even 0.2 tons per man shift. However, after technical reconstruction and the practice of native mechanization, its daily output has been increased to 110 tons in mining a thin, inclined coal seam of approximately 0.3 meters. The mine's efficiency has been improved to 0.6 tons. The cost per ton of coal is only 2.94 yuan, and it has become a red banner of small scale coal mine technical reconstruction of Szechwan Province.

2. Increasing common accumulation [fund] of people's communes and enlivening rural economy:

Following strengthening, development and improvement, small scale coal mines operated by communes generally have been able to make a profit. This has increased community assets of hsien and communes and produced an important effect on the development of hsien and commune industries in the support of agricultural development and in the strengthening and development of people's communes. For instance, the gross industrial production value of Chia-hsien, Honan Province in 1959 is 14,500,000 yuan; 3,620,000 yuan, or 25 percent, being production value from the coal

industry. Its industrial profit is 760,000 yuan; 520,000 yuan, or 68.5 percent, being profit from the coal industry.

As a result of the development of the coal industry which increased the fund accumulation of hsien, some communes purchased such machinery as locomobiles and D. C. generators, and installed electric lights. Thus, the materialistic and cultural living of the farmers has been improved. "Coal mining development by the communes has changed the outline of rural districts. Noise of machinery is everywhere. Electricity lights every house," said the commune members.

Out of the 23 people's communes of Chieh-t'ü Hsien in Shansi Province, 19 have developed small scale coal mines, and the gross production values from the coal industry of eight of these communes has accounted for approximately 30 percent of their gross industrial production values. Among these, the coal mine income of Tui-chen Commune represents 57 percent of its total income.

In 1959 alone, the coal mine has provided the commune with more than 12,000 yuan and also made it possible for the commune to purchase five automobiles. In addition, a number of dining halls and residence quarters were constructed. As a result of profits earned from coal mines, many communes bought machine-made farm tools and started factories. The appearance of rural economy has changed.

3. Comprehensive utilization of coal in support of agricultural production:

At the same time the small scale coal mines working on the "five determinations" they also gave consideration to the comprehensive utilization of coal. While carrying out technical reconstruction on key mines, small scale native chemical fertilizer plants and native oil refining plants were also established. Definite results in the comprehensive utilization of coal have already been achieved by Szechwan, Shensi, Tsinghai, Heilungkiang, Kwangsi, and Kirin provinces and regions. For instance, important developments have been made during the past few years by the Wei-yuan Coal Mine of Szechwan Province in the work of extracting tar oil by native refining. For the production of every ton of coke, the amount of tar oil extracted has been increased from the original 5.5 kilograms

to 19.9 kilograms at present, with a highest extraction reaching 22 kilograms.

Using coal as the raw material, the Hung-ch'uan Coal Mine of Tzu-ch'ang Hsien, Shensi has been able to refine gasoline, kerosene, and light and heavy diesel oil. This has not only increased the income of the mine, but it has also solved the supply problem of kerosene for lighting of the neighboring masses.

The reaction of the masses has been: "we have to carry out oil refining work when we are not busy farming and we have to do the same even when we are busy farming." In addition, many hsien and communes have begun to pay attention to utilizing coal for the development of native chemical fertilizer production as a means of supporting the increased production of agriculture.

From now on, following the "four modernizations" development in agriculture, even greater developments will take place in the comprehensive utilization of coal

*

*

*

Principal Sources of Investment and Equipment

An active solution must be provided to the problem of investment and equipment in connection with the technical reconstruction of small scale coal mines. The method of solution has already been clearly defined in the "Report of the Party group of the Ministry of the Coal Industry on the Work Conference of Local Small Scale Coal Mines" as authorized and transmitted by the Party Central Committee.

The report specifies that, "aside from a portion subsidized by the state, investments on small scale coal mines must depend on the efforts of provinces, shih, autonomous regions, special districts and hsien themselves."

On the basis of this provision and having taken into consideration the development of large, medium, and small scale enterprises, the Ministry of the Coal Indus-

try has already decided to include in its state plan of 1960 the reconstruction of 800 small scale coal mines.

The above report also points out that "based on the conditions of individual areas, the method of mine supporting mine may also be adopted, which means that within a two or three year period profits of small scale coal mines need not be handed over to authorities above but may be kept and used for the technical reconstruction of the mines (or the local areas) themselves." This method is not unconditional. According to conditions, it may or may not be adopted, and the decision is up to the local areas.

With regard to the supply of equipment and materials, the report specifies that "aside from the portion supplied to the small scale coal mines for technical reconstruction by the Ministry of the Coal Industry out of its own equipment, and materials allocated by the state, the responsibility for acquiring the rest lies with the provinces, shih and autonomous regions themselves.

For those provinces, shih and autonomous regions which are not able to manufacture the necessary equipment and materials, arrangements may be made through the State Economic Committee (kuo-chia ching-wei) to adopt the method of "custom" processing by having their own [raw] materials processed by other provinces, shih or autonomous regions which have manufacturing facilities."

Of course, depending on state supplied investments and equipment alone cannot satisfy the needs of technical reconstruction of China's small scale coal mines which number in the tens of thousands.

They should not be limited to one method only to supply these needs. There should be several methods. The above report, authorized and transmitted by the Party Central Committee, has pointed out to us a number of ways to solve this problem of investment and equipment.

ADVANCED EXPERIENCE OF SMALL SCALE
COAL MINES IN 60 ITEMS OF 15 CATEGORIES

[This is a full translation of an article in Mei-t'an Kung-veh (Coal Industry), No 28, 29, Peiping, 20 December 1959, pages 30-35, 47.]

A. Enterprise Management and Control

1. The experience of "nine natives" and "ten modernizations" of the T'ung-hsing Coal Mine, Yung-ch'uan Hsien, Szechwan Province:

In the mining of steeply inclined thin coal seams (coal thickness 20-30 centimeters) prior to the big iron and steel movement of 1958, the daily output of this mine was only 40 metric tons. Its efficiency in terms of total personnel was not even 0.2 tons per man shift. A large scale implementation of the movement for technical innovation by the masses, since the big leap forward has created the "nine natives" (native hoists, native blowers, native water pumps, native automatic ventilation gates, native coal unloading platforms, native moving coal screens, native coal crushers, native detonators, and native explosives) and achieved the "ten modernizations" (hoists for hoisting, blowers for ventilation, native batteries for lighting, rails for haulage, "so-tou" [some kind of bucket or scraper] for haulage out of the working faces, moving screens for coal dressing, wooden troughs for coal washing, automatic dumpers for coal cars, heavy chisels for coal extraction, and automatic gates for ventilation).

As a result, the average daily output of September 1959 exceeded 110 tons. Efficiency in terms of total personnel was over 0.6 tons per man shift. Moreover, the cost of mine run coal production during the third quarter was reduced to 2.94 yuan per ton.

2. Experience of technical reconstruction of Hsin-sheng Coal Mine, I-ch'eng Hsien, Shansi Province:

After reconstruction, the average daily output of this mine for September 1959 was 48 tons, an increase of 70 percent over the January-August period. The efficiency in terms of total personnel was 1.87 tons per man shift, an increase of 274 percent over that of January-August. The unit cost of 3.09 yuan was 27.2 percent lower than that of January-August.

The native method of reconstructing this mine consists principally of changing from hand operated block and tackle to locomobile operated wooden hoist hoisting, changing from handpick mining to drilling with hand operated spiral drills and blasting, and changing from manually hauled baskets to rubber wheeled flat cars underground and to manually pushed cars on wooden rails for transporting on the surface.

3. The mine supporting mine experience of Shuan-ch'iao Coal Mine, Kuang-feng Hsien, Kiangsi Province:

Carrying out the Party's policy of enterprise development with diligence and frugality, the Shuan-ch'iao Coal Mine produced, during the period of January through September 1959, 22,069 metric tons of mine run coal. Aside from turning over [to authorities] the sum of 100,000 yuan, it also arranged funds and started the construction of two pairs of mine shafts with annual capacities of 100,000 and 50,000 tons respectively, and eight pairs of mine shafts of 20,000 tons annual capacity each.

4. Experience of coal mining development from scratch of the Shan-chin-chia Coal Mine, Fou-yang Special District, Anhwei Province:

With the start of shaft construction in December 1958, this mine by September 1959 had become a semi-native and semi-foreign operation with a daily output of 263 tons. A pair of newly reconstructed "small foreign group" mine shafts with an annual capacity of 50,000 metric tons already entered into actual production. Another pair of "small foreign group" mine shafts with an annual capacity of 150,000 tons will also be entering into actual production by the end of 1959. In addition, a shaft cons-

truction team, a civil engineering construction team, and a machinery plant have been established.

The principal experience of this mine consists of relying on the masses and enterprise development with diligence and frugality under the leadership of the Party. With a continued revolutionary spirit, it has carried out mass movements for technical and has greatly altered the appearance of production.

At present, it uses spiral drills for drilling, angle iron wooden rails and manually pushed cars for haulage, "chi-tou" (pans or baskets?) discharge water, and power operated wooden hoists for hoisting.

5. Experience of Shang-chuan Coal Mine, Kung-hsien, Cheng-chou Shih, Honan Province in continuous cost reduction:

Mass movements for technical revolution and technical innovations were vigorously carried out by this mine. Tools and equipment introduced reached 132 types. The appearance of production was changed. Productive labor efficiency was improved. The work of recovery and re-use of mine timbers was strengthened. Mine timber consumption was reduced. Economic accounting work of shifts and groups was seriously carried out. Standards of management were improved. Management organization was reduced and tightened. Costs were reduced.

During the first half of 1959, 78,000 metric tons of coal were produced, a 30 percent improvement over output during the same period of 1958. The labor productive efficiency of underground production workers has been increased to 3.028 tons per man shift, 32.7 percent higher than at the beginning of 1959. Mine timber consumption is now 13.3 cubic meters per 1,000 tons of coal produced. This is 40 percent lower than 1958. Cost of production is 4.68 yuan per ton, which makes the mine the lowest cost unit in Honan Province.

6. Experience of Pi-shih-tu Coal Mine, Ou-ch'eng, Hupeh Province in technical reconstruction:

The Pi-shih-tu Coal Mine followed the principles of using locally available materials, using whatever was at

hand, developing from small-scale to large-scale, and changing from native to foreign methods. It carried out widespread reconstruction in development work, in hoisting, haulage, ventilation, lighting and mining methods. Its reconstruction work started from organization of the shaft and roadway system, and branched out into changing the hoisting system to four types of hoisting of steam hoists, manual and animal hoisting, and aerial ropeways, and adopted wooden rails and wooden mine cars for haulage.

Since the shaft and roadway system was organized, water underground gathered in the water storage tank making possible mechanical pumping and mechanical ventilation. It also made possible the use of native batteries for lighting and the shortwall mining method. Semi-native and semi-foreign production was realized.

7. Experience of Ch'ing-lung-shan Coal Mine, Nanking, Kiangsu Province in small shaft reconstruction:

The principal experience of this mine's work has been an ability to develop through its own efforts, plus a large scale practice of technical revolution. It has been able to achieve mechanization and semi-mechanization in its major production processes. In hoisting, it has been able to improve to the point of using native hoists. Moreover, it uses cars on wooden and iron rails for underground haulage and electric lights for lighting. In addition, it has been able to mechanize its pumping and ventilation systems.

8. Experience of Cho-tzu-shan Coal Mine of I-k'o-chao Meng [league] area in the Inner Mongolia Autonomous Region of relying on the masses to carry out its enterprise management work:

This mine has three pairs of shafts and one coking plant. It overfulfilled all its tasks from January through September 1959. Gross production value was fulfilled by 116.9 percent, and mine run coal production by 121.8 percent. Coke production reached 106.94 percent. The cost of mine run coal was 4.589 yuan per ton, a decrease of 8.25 percent.

The cost of coke was 14.86 yuan per ton, a decrease of 9.97 percent. The efficiency in terms of total per-

sonnel was 1.1 tons per man shift, an increase of 15.8 percent. Mine timber consumption was 4.51 cubic meters per 1,000 tons of coal produced, a decrease of 9.6 percent.

Its principal experience has been an emphasis on key points under the Party committee member's leadership and a strengthening of the first line of production. Ideological leadership and staff and workers' education were also strengthened. The work of criticizing was carried out. Favorable situations were taken advantage of it, and efforts were built to the maximum.

High production, superior quality red banner emulation movements centering upon technical innovations were carried out in a big way. Tools, equipment and operating methods were improved, the policy of safe production was thoroughly carried out, and a system of regulations was strictly followed. Production was held in one hand while people's living was held in the other. This is a red banner mine in the Inner Mongolia Autonomous Region.

9. Experience of Ta-ying People's Commune's Niang-niang-shan Coal Mine, Pao-feng Hsien, Honan in mine development through its own efforts and with diligence and frugality:

This mine constructed four pairs of small shafts. In 19 months it produced 58,000 metric tons of coal, 2,479 tons of coke, 11.8 tons of "tung-ho" and 5.5 tons of tar oil with a gross value of more than 924,000 yuan. Aside from handing over 430,000 yuan of profits to the commune, the mine also built 63 mud houses and purchased eight power operated pieces of machinery including a boiler and a water pump.

This mine was started with capital and materials made available by the masses after the masses had been organized and the five advantages of mining development debated. The technical reconstruction was carried out through organized debate by the masses after various rightist deviation ideologies had been criticized.

10. The experience of Wang-ch'iao People's Commune of Hsiang-yuan Hsien, Shansi Province in its management of small coal mines:

Various management methods were set up by this commune on the basis of uniting the management system of local state-operated coal mines with actual conditions of the commune, its labor force, funds and equipment, the organizational management of mine shafts as well as the management of finances. As a result, standards of management have been improved, more than 24,000 yuan has been saved, cost has been lowered to 2.12 yuan per ton, and efficiency improved by 150 percent.

11. The experience of Ho-hsia People's Commune of P'ing-hsiang Hsien, Kiangsi Province in the development of coal production and in achieving economic prosperity:

Not only has the coal mining development of Ho-hsian People's Commune satisfied the requirements of lime slaking of the commune, increased farmland fertilizer production, and other civilian uses for the entire commune, but the profits earned from coal sales have provided funds sufficient for the development of the commune's agricultural, subsidiary and fishery industries making it possible for the commune to achieve economic prosperity.

Since the No 1 coal mine of this commune was started in August 1958, not only has it turned over to the commune a total profit of 42,000 yuan, but it has also carried out native method reconstruction. This has changed its production appearance and increased its daily output from 7-8 tons to 100 tons.

B. Safe Production

12. The experience of 20 years of safe production of Ch'e-chia-chuan Coal Mine, Hsing-hsien, Shansi Province:

Since the Ch'e-chia-chuan Coal Mine was liberated 20 years ago in 1938, no fatal accidents or heavy injuries have ever occurred. Furthermore, since the big leap forward of 1958, not only has production quadrupled, but even light injuries have been eliminated, and the Party's policy

of safe production has been concretely put into practice. The mine has placed heavy emphasis on ideological education work, reliance on the masses to strengthen the work of checking, the adoption of concrete measures, technical innovations, and an untiring struggle against various types of disasters.

13. The experience of 12 years of safe production of YANG Kuang-jui retreat mining unit, Wu-chia-kou Coal Mine, Huai-lai Hsien, Hopeh Province:

Under the most complicated natural conditions, the YANG Kuang-jui retreat mining unit maintained safe production for 12 years. This record was achieved principally through relying upon the Party's correct leadership, the determined and thorough practice of the policy of safe production, the development of the intelligence of the masses, conscientious adherence to the system of regulations, and the normalizing of safety work.

14. A decade of experience in water exploring and safe production work at the Hsin-feng Coal Mine, Hsu-ch'ang Special District, Honan Province:

By struggling against water in old workings, the Hsin-feng Coal Mine mastered the rules of underground water flow and acquired a set of native-method water exploring and releasing experience that is principally the "reduction of water pressure by sections." In the last 10 years, it has safely released more than 430,000 tons of water from old workings and has mined more than 300,000 tons of coal left in these old workings.

15. The experience of proper water exploration of I-ho-kou Coal Mine, Yang-ch'uan Shih, Shansi Province:

This mine lies on low ground. The threat of water has been very serious. However, through the practice of a thorough water exploring system, safe production has been guaranteed. Moreover, through years of actual experience, the mine has evolved a set of comparatively complete operating methods and systems in the exploration and releasing of water. It has also created a three way water exploring drill that can be hand-operated, foot-paddled or driven by power.

C. Hoisting

16. The animal turning hoist [like the hoisting of water from an old fashioned well] of I-t'ang Coal Mine, Chieh-t'i Hsien, Shansi Province:

This "turning hoist" is used in a 55 meter deep vertical shaft. Two horses are used to lift 300 kilograms [of coal] each time. Each shift 60 metric tons are produced, which means doubling of the previous capacity. The method of changing "rope ends" is adopted. This means that the horses, in pulling the turning hoist, travels in one direction only. This has solved the problem of having to turn the horses around with each hoisting. The structure of this turning hoist is simple. The entire reconstruction cost was only 2,000 yuan.

17. Animal hoist of the state operated Ssu-lung-t'oukou Coal Mine, Ning-ch'eng Hsien District, Chao Meng [league], Inner Mongolia Autonomous Region:

The construction of this hoist is simple. Only 0.7 cubic meters of elm wood and 20 kilograms of iron are used. The cost of construction was 130 yuan.

It is now used in a vertical shaft 51 meters deep. The operation is carried out by three workers and two horses. In each 90-second hoist 175 kilograms of coal can be raised. The daily output can reach as much as 147 metric tons.

18. The horse drawn wheels and horse drawn automatic coal unloading buckets of Ta-huang-shan and other coal mines of the Wei-wu-erh Autonomous Region, Sinkiang:

This is a one direction horse-drawn wheel, endless rope hoist used in an inclined shaft. Its construction is simple, and it is low in cost. The slope length of the inclined shaft is 40 meters. [On the rope] are hung 15 small bamboo baskets, and it is pulled by one horse. The hourly production capacity is 3.4 tons and daily production 68 tons.

19. Animal hoisting in the blind inclined shaft of the No 2 coal plant of Feng-chieh Hsien, Szechwan Province:

An animal drawn hoist is used in the blind inclined shaft of a horizontal roadway. It is built with lumber and uses a simple construction. The cost was 500 yuan. The slope length of the blind inclined shaft is 220 meters. At a slope of 12 degrees, the hoisting capacity, when pulled by two horses, is 400-600 kilograms. The daily hoisting capacity is 100 tons with 140 ton maximum.

20. The animal drawn hoist of Kang-p'eng-shan Coal Mine of Chiang-k'ou People's Commune in Lo-p'ing Hsien, Kiangsi Province:

This hoist is used in vertical shafts 50-70 meters deep (or inclined shafts with slope lengths of 100 meters). It is pulled by one horse and the hourly hoisting capacity is 4.5-5 tons. It is made of camphor wood, costing 400 yuan. Its construction is somewhat more complicated than the turning hoist. A gear clutch can be installed to make the hoist rotate in either direction.

21. The locomobile operated wooden hoist of Wu-ching Coal Mine, Ch'ang-wei Hsien, Shantung Province:

Used in a vertical shaft 55 meters deep, the hoist is pulled by a 10 horsepower locomobile, and hoists 250 kilograms each time (the maximum amount hoisted being 500 kilograms). The daily output is 312 tons. With the exception of a wheel for the small driving belt and the bearings, the parts are all constructed of pagoda tree wood. The cost was low (931 yuan) and the use of a gear clutch (a tooth shaped clutch) has made it possible for this locomobile operated wooden hoist to turn clockwise or counter clockwise.

2. The locomobile operated wooden hoist of Hsin-sheng Coal Mine in I-ch'eng Hsien, Shansi Province:

The hoist used by this mine is simple in construction and low in cost. Employing the method of two opposite ways of connecting the belt, the locomobile's inability to make the hoist rotate in the reverse direction has been overcome.

The mine shaft is 30 meters deep, and the locomobile is 10 horsepower. The lifting power is 250 kilograms, and the output of each shift is 45 tons of coal.

23. The power operated wooden hoist (model 59-3) of Tu-shan Coal Mine in Kuang-te Hsien of Anhwei Province:

This hoist is of simple construction and can be manufactured easily. Its construction cost was 1,500 yuan. It is powered by a 10 kilowatt squirrel cage motor (due to a shortage of induction motors). The vertical shaft is 49 meters deep. Each hoisting is 300 kilograms. The daily output is 252 tons.

24. The steam hoist wooden bucket hoisting of Ts'ao-fou Coal Mine in I-yuan Hsien of Shantung Province:

The bottom discharge wooden bucket is simple in construction. Its own weight is 0.4 metric tons, and 0.75 tons can be hoisted each time. Its travelling speed is 3-4 meters per second. The shaft is 67 meters deep and its maximum hoisting capacity is 750-800 tons per day. This bucket was designed on the basis of the production of the mine and the cross section of the shaft. Since there is a cage dumper at the bottom of the shaft, and both loading and unloading equipment are available at the bottom and top of the shaft, the whole hoisting system can be considered automatic.

25. A combined system of hoisting and haulage of the Ma-chien Coal Mine in Lan-ch'i Hsien, Chekiang Province, that uses loaded cars to pull loaded cars:

Utilizing the topography of the mountain slope, the loaded cars in the mine shaft are pulled by loaded cars travelling down the mountain slope. This has solved problems of shaft hoisting and surface haulage, eliminated heavy physical labor, and also improved production. This system is now used in the vertical shaft of the mine. The shaft is 20 meters deep, and 150 kilograms are hoisted each time. Each hoisting takes 60 seconds. Over 60 tons can be hoisted every hour.

D. Haulage

26. The hand operated hoist and native endless rope of the Chai-li Coal Mine, Tzu-ch'uan District, Shantung Province:

The simple hand operated hoist is made of lumber. Its construction is simple and it is low in cost. This hoist can be used in coal mining by winzes. It is now used in a winze 12 meters long which slopes at an angle of 30° . With a two man operation, 25 tons of coal can be hoisted each shift. This is 15 times higher than a purely manual operation.

The operation of the grinding wheel ("mo-ch'e") type endless rope is the same as that of the usual grinding wheels. It is employed in a down the slope incline 85 meters long at an angle of $8 - 9^{\circ}$. Each shift 25 tons of coal are hoisted, 2.5 times more than pulling by man power alone. In addition, volume is quite substantial.

The hand turned endless rope overcomes the excessive volume shortcoming of the above. Its construction is simple, and it is low in cost. Used in a down the slope incline 60 meters in length and at an angle of 10° , and with a car hooked on at every 10 meters, 37.5 tons of coal are hoisted each shift.

27. Automation of haulage with bamboo and wooden structures by the Pai-shan Coal Mine of I-hsing Hsien, Kiangsu Province:

This mine has created a set of native equipment which includes bamboo and wooden rails, "wai-wai" cars, coal storage blocks and tackles, native cages, native cage guides and native cage seats. The construction of this native equipment is simple. Local materials are utilized and the cost of construction is low. These different types of equipment have made the work of hoisting and haulage automatic. They have thus increased production and lightened the labor of the workers.

28. Ropeways for short distance haulage in the Ch'uan-chu Coal Mine in Lo-shan Special District of Szechwan Province:

This mine is located in a mountain region 1,300-1,500 meters above sea level. Seven bamboo ropeways [not clear whether bamboo structures or bamboo ropes] totalling 23,493 meters have been installed. The mine has also constructed 300 meters of sliding chutes and 20 kilometers of wooden rails. These have solved the problem of surface transportation from the mine to the connecting highway. The labor of 1,540 persons has been saved, and the cost of surface transportation has been lowered from 5.13 yuan to 2.1 yuan [per ton of coal].

29 The hydraulic coal transportation of Ta-hsia Coal Mine in Ch'u-hsien of Szechwan Province:

The horizontal tunnel of this mine is located in a valley. Utilizing underground and mountain water, hydraulic coal transport, both underground and on the surface, is realized. The underground water haulage covers a distance of 540 meters. The total length of the surface water trough is 2,834 meters, with 300 tons of coal hauled daily. This means a saving of a labor force of 534 persons daily. Moreover, it resolves the problem of coal dressing.

30. The wooden rails, wooden rail forks, and wooden turntables of Pai-tzu-kou Coal Mine in Pin-hsien, Shensi Province:

Wooden rails of 2,000 meters are laid both underground and on the surface, thus realizing the practice of wooden rails for haulage. Lumber is also used to make rail forks and turntables. With metal sheets wrapped over the rail connections, the life of the rail is prolonged three times. By turning the old rail ties over, 80 percent of them can be used again.

E. Pumping

31. The hand operated water pump of Ch'ang-chia-yu Coal Mine of Li-hsien, Hunan Province:

This water pump is constructed entirely of wood. It is two-man double cylinder hand pump. It has a lift of 15 meters, and a capacity of 9 tons per hour.

32. The "Satellite" brand small water pump of Wu-chia-kou Coal Mine of Chang-chia-k'ou [Kalgan] Shih, Hopeh Province:

The structure of this two-man operated reciprocating type iron water pump, manufactured by this mine, is simple. It can be built in most small scale machine shops. The lift of this type of pump is 20 meters with a suction height of 6 meters and a capacity of 12 tons per hour. Used in the field, it is simple to operate and has good characteristics. It gives a steady flow of water with high efficiency, 3 - 4 times higher than the use of man power alone.

33. The locomobile operated "Liberation" type water cart [pump] of Pi-shan Coal Mine, Ling-ju Hsien, Honan Province:

The mine's two years of actual experience in the use of this type of water pumping has proved that its operation is simple and safe and its efficiency high. It has a lift of 30 meters, and its pumping capacity is as high as 48 tons per hour. Moreover, it can be used in both vertical and inclined shafts.

34. Two stage water pumping by horse drawn water carts by the commune operated small mine of Hsi-lang-kou, Chang-ch'iu Hsien, Tsinan Shih, Shantung Province:

This "Liberation" type water cart [pump] is used in shafts approximately 30 meters deep and in mines where the water flow is not large. In a fairly deep (about 30 meters) vertical shaft, one "Liberation" type water cart is installed at the bottom. At a height of 15 meters, there is a dust-pan-shaped opening and, through a ditch in the middle of the roadway, water pumped by the water cart flows to another vertical shaft (depth of 15-20 meters). With a second horse drawn "Liberation" water cart installed at this shaft, the water is pumped to the surface. The flow of water with such an arrangement is 8-10 cubic meters per hour.

F. Ventilation

35. The two-man paddled double change speed wooden blower of Yun-ting Coal Mine, Lung-ch'ang Hsien, Szechwan Province:

The shaft and blades of this blower are made of iron. The rest is made of wood. It is operated by 2-3 persons in rotation and its capacity is 145 cubic meters per minute.

36. The single person paddled wooden fan blower of Chin-yu-t'ing Coal Mine, Shao-tung Hsien, Hunan Province:

This blower is run by a leather belt. It has a capacity of 80 cubic meters per minute. Most of materials used are wood, and its cost of construction was about 30 yuan.

37. The water powered wooden fan blower of Mei-t'an-chu Coal Mine, Ning-hsiang Hsien, Hunan Province:

The water wheel is turned by the impact of mountain water or underground water. This power is transmitted through a leather belt to operate a fan blower. When the water flow is 2 tons per minute, the speed of the blower is 200 revolutions per minute and its air volume 200 cubic meters per minute. Except for the dividing plate, the screws, the bearings and the main shaft of the working wheel, which are all made of steel, the system is of wooden construction. The cost of construction was 120 yuan. Special attendants are not required.

38. The locomobile powered wooden shell "chou-liu" type fan blower of Wu-ching Coal Mine, Ch'ang-wei Special District, Shantung Province:

The construction of this blower is simple. Aside from the shaft and the blades which are made of iron, the equipment is of wooden construction. Its use and maintenance are easy. Its cost of construction was 100 yuan.

Efficiency: when powered by a 10 horsepower high speed locomobile, the air volume is 250 cubic meters per minute and the air pressure is 30 millimeters of water column.

39. The multiple stage steam spraying ventilation system of the Ta-chung Coal Mine of Lin-hsien, Hsin-hsiang Special District, Honan Province:

This mine depended originally on natural drafts. However, with the development of 420 meters of hoisting roadway underground, the mining area became larger each day. The amount of air was soon inadequate. With a shaft depth of 147 meters, and a ventilation duct length of 1,8000 meters, more than 900 cubic meters of air per minute have been generated using waste steam from the steam pump and steam hoist, and by employing the method of two stage spraying ventilation. This has solved the problem of insufficient air underground.

G. Lighting

40. The native dry cell mine lamp of Shih-ch'eng-chin Coal Mine of Hunan Province:

Three types of batteries manufactured with manganese powder, lead powder and ammonium chloride could supply 16 hours of light. However, their costs are high (0.4 yuan each light). By the use of various substitute raw materials, nine different formulas just have been created. This has solved the problem of shortages of raw materials. Since materials are obtained locally, the costs are lower. The lighting time is 8-10 hours.

41. The native storage battery mine lamps of Hua-chung Coal Mine and Kuang-yuan Coal Mine in Wei-yuan Hsien of Szechwan Province:

By the use of "liu-suan-ya" [some sulfate, but original character believed to be an error], magnesium sulfate, zinc sulfate and "hu-min-suan" solutions in place of dilute sulfuric acid electrolyte for charging, not only has the shortage of sulfuric acid been overcome, but the costs are lower and clothes are not burned. The lighting time is 12 hours.

The "chu-chi" [literally, bamboo electrode] batteries and "simple batteries" not only are uncomplicated in construction with savings in raw materials, but are also low

in cost. Each battery costs two yuan and has a life of 3-4 months, and a lighting time of 12 hours.

42. The use of mountain water for power generation to solve the problem of native battery charging by the Hsieh-ho Coal Mine of Yung-ch'uan Hsien, Szechwan Province:

This mine is utilizing mountain water with a displacement of 3.3 meters and a flow of 12 liters per second to drive a one horsepower D. C. generator to charge native batteries. Each day 220 batteries are charged at a total investment of 750 yuan.

43. Utilizing a hydraulic station installed on a boat, the Yu-chiang Coal Mine of P'eng-shui Hsien, Szechwan Province solves the problem of native battery charging:

At the end of a shallow area of swift current with a water level drop of 1.4 meters, a small wooden boat is secured. A two kilowatt D. C. generator is installed on the boat and river water is utilized to generate power for charging native batteries. Each day 400 native batteries can be charged.

H. Mining Method

44. The inclined sub-slicing collapsible bamboo false roof coal mining method in the steeply inclined thick coal seam of Ta-chung Coal Mine in Lin-hsien of Honan Province:

The thickness of the coal seam at this mine is five meters. It dips at an angle of 45-55°. Working face lengths vary from 15 to 20 meters. The mining height of the first subslice is 2.4 meters; that of the second subslice is 2.6 meters. The footage advanced during each cycle is 1.8 meters. During a 24 hour day, two shifts are engaged in the extraction of coal while one shift is collapsing the roof. Depending on the hardness of the coal, either drilling and blasting or hand picks are used to break down the coal. The dip of the seam is utilized to let the coal slide down to the main roadway where it is loaded into cars and hauled to the surface.

Adoption of the bamboo false roof sub-slicing collapsible coal mining method, has eliminated serious coal losses. The old mining method used to leave coal pillars in the thick coal seams. The original recovery rate of 30-40 percent has been raised to over 90 percent, and the efficiency of recovery workers has been improved to 20.09 tons per man shift.

45. The shortwall mining method and the working face coal haulage endless rope of Ch'a-lu-ho Coal Mine in Chang-i Shih of Kansu Province:

The thickness of the coal seam in this mine is 0.8-1.0 meters. It dips at an angle of 18-25°. The wide-roadway-advancing-method is used and the length of retreat working faces is 30-40 meters. The coal is broken by drilling and blasting. Coal is mined by the first and second shifts, with a daily advancing footage of 2.4 meters. The third shift is engaged in collapsing the roof. A "round" [probably refer to the three shifts] shift consists of 35 workers, with a daily production of 90 tons of coal. The efficiency of underground production workers is 1.6 tons per man shift, consumption of explosives 120 kilograms per ton [error, probably 1,000 tons] of coal mined, mine timber consumption four cubic meters per 1,000 tons of coal mined, and the cost of production amounts to 2.72 yuan per ton.

To overcome the heavy physical labor involved in coal haulage at the working face of such a thin coal seam, the staff and workers of the mine have created the endless rope automatic coal haulage method. Near the working face, four supporting posts are fixed at the upper and lower ends of the closely spaced props. Rollers are installed on each of the supporting posts and pieces of Manila rope are joined in an endless rope. Small cars are tied to the rope with movable clamps. When the loaded cars move downward, they pull the empty ones up in an endless rope haulage.

46. The gently dipping and extremely thin coal seam mining method, and retreat working face haulage of the Wei-yuan Coal Mine of Szechwan Province:

The coal seam of this mine is 0.25-0.6 meters thick, and the mined height is 0.4-0.65 meters. The dip of the

coal seam is 4-6°. The coal is medium hard and its cleavage is developed. Both mining and haulage are done by hand. Taking advantage of the cleavage of the coal seam, the working faces are arranged in three different ways, along the strike, along the dip and along the "false" dip.

By increasing the length of the working face and by regulating the distance of roof control, the ground pressure is utilized to loosen the coal. The coal is then mined with heavy picks with movable tips. The roof is controlled by either a partial fill or a complete fill. Employing comprehensive working teams, coal mining is done by two shifts while filling is done by the third shift.

Haulage at working faces is done by "small bamboo baskets and small flat cars," while haulage in roadways of mined districts is done by "angle iron rails and small cars." This has not only solved the haulage problem of working faces in an extremely thin coal seam, but it has also improved the working efficiency from 1.2 tons per man shift to 10 tons per man shift when hauling from distances within 200 meters.

J. Hanpick Coal Mining

47. The experience of HO Ting-chung in handpick coal mining at the Hua-yin Coal Mine of Chiang-ching Special District, Szechwan Province:

In a 70-80 centimeter thick coal seam with a dip of 36°, medium hard coal, and an easily collapsing hanging wall, high production records of handpick coal extraction were repeatedly established, the highest being 145 tons per shift (including coal digging and prop setting). Based on different coal seam structures, seven kinds of handpick coal breaking methods have been created, and tools have been improved. These improvements have received wide scale applications at the mine.

K. Advancing Work By Hand Methods

48. The experience of monthly advancing footage by 87 meters using hand methods in the No 1 shaft all-rock roadway of Wan-chia Coal Mine in Ch'ung-ch'ing Hsien, Szechwan Province:

The cross section of the horizontal roadway is 7.2 square meters, and the hardness of the rock is $f = 5-8$. Both drilling and rock loading are done manually. The working face is divided into three benches and the work is a two-cutting, shallow hole multiple cycle, parallel overlapping operation. Each shift advances two cycles with each cycle of 0.9 meters of advance.

L. Drilling And Blasting

49. The hand operated drill of Yung-shen Coal Mine of Yang-ch'uan Shih, Shansi Province:

This mine changed its coal mining work from a handpick operation to drilling by hand-operated spiral drills and coal breaking by blasting. Each shift of six workers can mine 45 tons of coal, improving the coal extraction volume by 50 percent. The construction of the hand operated drills is simple and only one person is required to operate the drill. Drilling in the "Chang-pa" coal of the T'ai-yuan coal system, a drilling rate of 30 - 40 centimeters per minute was achieved with very good results. This type of hand operated drill is suitable for mines without power.

50. The double roller hand operated drill of T'ung-i Coal Mine in P'ing-ting Hsien of Shansi Province:

This type of hand operated drill is simple in construction. When placed on a drill support, this drill is characterized by light operation and high efficiency. Drilling in the "chang-pa" coal of T'ai-yuan system, its drilling rate is 30 centimeters per minute. Not only will it drill horizontal holes, but it can also be used to drill top holes or down holes. When a comparatively hard drill bit is used, the drill can also be used for hole

drilling in soft rocks. It is suitable for use in mines without power.

51. The hand turned drill of Chiang-pei Coal Mine in Chiang-ching Special District of Szechwan Province:

The jacket, threading rod, handle and ratchet of this drill are made of iron. It has a spiral drill rod and the diameter of the drill bit is 35 millimeters. It is suitable for advancing work in rock roadways where power is not available and where the rock hardness, $f = 4-8$. Drilling in sandstone, its efficiency is one meter per hour. Used in a roadway of shale with a cross section of 6.6 square meters, the rate of advance is two meters per shift.

M. The Saving of Mine Timber

52. The stone props of Ch'ing-ho Coal Mine in Wei-yuan Hsien of Szechwan Province:

The coal seam of this mine is 23-42 centimeters thick. It dips at an angle of $3-4^{\circ}$. The height of the mine is 80 meters [error for centimeters]. The stone props are 12-15 centimeters square (cross section) and they are used with wooden caps and wooden shoes. This increases their compressibility and they can be used 3-4 times over. Stone legs of 20x25 centimeters in cross section, 40-80 centimeters long are used in roadways in conjunction with wooden beams.

Each leg of a supporting framework may be composed of two or more pieces of stone material. Medium and coarse grained sandstone is used, which costs 8.1 yuan per cubic meter. A total of 716 pairs of stone legs and 64,200 pieces of stone props has been used. This has saved 500 cubic meters of mine timbers.

53. The experience of saving mine timbers of Hsin-feng Coal Mine of Hsu-ch'ang Special District, Honan Province:

Through the use of five types of supports consisting of the five sectional framework, the inverted V framework, the single leg framework, the legless framework and the

short leg framework, and the use of such substitutes as a bamboo reinforced cement framework, a bluestone framework, brick posts and ceramic props, this mine has saved more than 4,000 cubic meters of mine timbers during the past few years.

In mine timber substitutes alone, 802 cubic meters of mine timber have been saved in 1959. Although this mine has a comparatively large output and good equipment, its experience of saving mine timbers can still be promoted by small scale coal mines.

54. The ceramic props of Kuan-shan Coal Mine of Hsu-ch'ang Special District, Honan Province:

The use of ceramic props by the Kuan-shan Coal Mine of Hsu-ch'ang Special District, Honan was started in January 1957. Since then it has used 20,078 pieces of these ceramic props in place of 732 cubic meters of mine timbers. The cost of ceramic props is low. One that is two meters in length costs 1.25 yuan. This is only 23.2 percent of the cost of a wooden prop of the same size.

To prevent ceramic props from breaking due to excessive side pressure, the Kuan-shan Coal Mine first adopted the method of a regular framework with "loose" sides. However, in October 1959, it successfully trial-manufactured the "ceramic five angle framework" which is a five sectional contacting framework. In this manner, the compressive strength of the ceramic props is fully taken advantage of, while the use of its bending resistance is avoided.

55. The ceramic props of Chu-ch'en Coal Mine of Shantung Province:

A total of 2,460 pieces of ceramic props have now been used in the advancing roadway. No cracking or breaking has been noted after eight months of observation. Each cubic meter costs 38 yuan. This is 62 percent lower than mine timbers of the same size.

N. Coal Washing

56. The experience of coal washing in wooden chutes by the Chiang-pei Coal Mine of Chiang-ching Special District, Szechwan Province:

Utilizing the topography of the foothills, the Chiang-pei Coal Mine has set up its native coal washing system from top to bottom in a staircase arrangement. It uses mine and mountain water to wash coal in three sections of wooden chutes. This forms a single operation with automatic discharge of gangue rocks. The washed coal is hauled by water into the coke oven through another staircase arrangement. After the coal is dehydrated in the oven, a fire is started for the coking process.

The results of this type of coal washing are a great improvement over washing in troughs on ground level. They are also superior to washing in single section wooden chutes. With a coal washing capacity of 20 tons per hour, the ash content of washed coal is 9-10 percent, and its sulfur content below 0.6 percent. The washed coal recovery is 80-85 percent, and the working efficiency is 25 tons per man shift.

P. Comprehensive Utilization

57. The experience in native method oil refining of the Hung-ch'uan Coal Mine in Tzu-ch'ang Hsien, Shensi Province:

Utilizing stoves, distillation pots, distillation towers, coolers, and other native types of equipment, this mine has refined coal tar, oil and shale oil into gasoline, kerosene, light diesel oil, heavy diesel oil and mixed oil.

Moreover, in methods of operation, it has summarized such experiences as oil packing, heating, dehydrating, cooling and fire prevention. This mines successful native oil refining method has not only solved the outlet problem of oil from coling and shale, but has also solved the lighting problem of the commune masses and encouraged the masses to actively engage in oil refining.

58. The experience of the Wei-yuan Coal Mine of Szechwan Province in oil recovery from native coking:

The coking of this mine is done in P'ing-hsiang native coke ovens. Since 1956 it has made many improvements on the angle between the walls and the bottom of the coke oven and on the firing mouth, it has also summarised a set of native method coking operation experiences which cover oven loading, bricklaying, plastering, lighting of ovens, putting out the fire of the ovens, and the discharge of coke. The coking rate at this mine is as high as 67.71 percent, ash 12.3 percent and sulfur 0.43 percent.

The mine started the recovery of tar oil from its coking process in 1953. With continued improvements on the oven base and on the method of discharging air, a new high in oil yield (22 kilograms per ton of coal) has been obtained. Furthermore, it has compiled valuable experience on oil extraction equipment and oil extraction operations.

59. The experience of Niu-ma-ssu Coal Mine, Hunan Province in improving the recovery rate of native method coking:

With innovations in coking techniques, the coke recovery rate of this mine has improved continuously. In addition to breaking the 80 percent recovery barrier in March 1959, by attaining a recovery of 83 percent, this mine passed the 84 percent recovery rate in the early part of April 1959, and is now struggling to exceed 85 percent recovery. The main innovations have been:

- (1) bricks are not used for roofing (only sinders from the coking process);
- (2) cut pieces of bricks are used in place of lump coal in building the firing neck (the firing point) of the ovens; and
- (3) coking time has been reduced.

Q. Production Organization

60. The experience of Hsi-p'o Coal Mine in the "four eight" overlapping operation of advancing work:

Since the latter part of October 1959, this mine has changed the original three shift operation of 24 persons at its half coal and half rock roadway advancing working face of 7.2 square meter cross sectional area, to four shifts of six persons in each shift, thereby putting into practice the "four eight" overlapping operation.

It is now possible to assign a large labor force to drilling and rock discharging during the overlapped time between shifts (changing from two drills originally to four drills and some rock loading work is also done during this overlapped time). In this way, the problem of spending too much time for drilling and rock loading in the three shift operation, and not enough time for other, work has been solved.

Moreover, the depth of drill holes has been increased (from 0.8 - 1 meter to around 1.5 meters). This has improved blasting efficiency and speeded up the rate of advance. As a result, the advancing footage was increased from 24 meters during the middle 10 days of the month to 80 meters during the last 10 days of the month.

CHIN-PEI SPECIAL DISTRICT CARRIES
ON EXTENSIVE PETROLEUM EXTRACTION FROM COAL

[This is a translation of extracts from an article written by LIU Kuo-fu of the Chin-peï Special District Bureau of Coal and Chemical Industries, Shansi Province in Mei-t'an Kung-yeh (Coal Industry) Nos 28, 29, Peiping, 20 December 1959, pages 45, 46.]

Very important developments were made in 1959 in our special district by the industry that extracts petroleum from coal. Prior to the first half of 1958, the industry of petroleum extraction from coal was just a blank sheet of paper in our district. Some people did not even know that man-made petroleum could be extracted from coal and shale through dry distillation.

In a year's time, this industry of Chin-peï district has progressed from nothing to something, and from small to large. At present 38 small scale coal (shale) petroleum refining plants can be found in one shih and 12 hsien with a total designed capacity of 14,900 tons a year. It is estimated that, by the end of 1959, there will be 47 production units, and the designed capacity will be increased to 28,700 tons a year. Moreover, both 300 tons per year and 3,000 tons per year continuous process square furnaces will be entering into actual production. Moreover, construction of the large scale Chin-peï Petroleum Works and the medium scale K'ou-ch'uan Petroleum Works of Ta-t'ung Shih are also being planned.

From January through October 1959, "small native group" types of petroleum works have produced a total of 3,199.7 metric tons of crude oil, completing 78.5 percent of the year's task. In finished products, these works produced 80 tons of light diesel oil, 309 tons of crude light diesel oil, 230 tons of heavy diesel oil, 289 tons of asphalt, 21 tons of crude phenol, 23,985 tons of semi-coke, 1.5 tons of paraffin, and one ton of phenol aldehyde resin.

These finished products have already begun to have an effect on the industrial and agricultural big leap forward. The petroleum refining plants of Ma-k'ou, Ma-chun-

ying and Yang-fang-k'ou have also successfully trial manufactured such products as gasoline, kerosene, lubricating oil, transformer oil, spindle oil, axle oil, paraffin, phenol aldehyde molding powder, cresol, and xyleneol. Some of these products are already being produced in small quantities.

In techniques of "ch'eng-tui" [literally, in piles; possible, batch] dry distillation, most of the units have passed the difficult stages. Through actual operations, the four petroleum works of Ma-k'ou, the South and North coal mines of Yang-fang-k'ou, and Hun-yuan-ch'eng-kuan have compiled a series of advanced operating experiences of "ch'eng-tui" dry distillation. The petroleum extraction rate has greatly exceeded original targets and the currently highest extraction record for gas fired "ch'eng-tui" dry distillation in Shansi has been established.

In tar oil processing techniques, 14 units have passed the most difficult stage. The light and heavy diesel oils and asphalt produced by the three (sic) petroleum works of Ma-chun-ying, Ma-k'ou, and Hun-yuan-ch'eng-kuan, and Yang-fang-k'ou, have all met the quality targets set by the Ministry of Petroleum.

The quality of crude phenol has basically met the Soviet Union's GOST 5.36-50 coal tar oil crude phenol targets. When mixed with varying amounts of natural diesel oil, or even when used by itself, the light diesel produced by the petroleum works of Wu-chia-ching, Tai-yueh, the South and North coal mines of Yang-fang-k'ou, has shown good results through long periods of actual operation. New records of processing time have been established repeatedly.

In most of the petroleum works, crude oil distillation time has been reduced from a few days to 10 odd hours. For instance, the distillation time of the North coal mine of Yang-feng-k'ou has been shortened from 70 hours to the present 12 hours, thus improving efficiency by five times; and Tz'u-ching-kou, from 106 hours to 16 hours and 20 minutes, improving the efficiency by 5.4 times.

Noted improvements have also been made in the petroleum extraction rate. The average petroleum extraction rate of

Yang-fang-k'ou's North mine in September was 91.81 percent with a maximum of 98.21 percent. The average rate of the Hun-yuan-ch'eng-kuan petroleum works in September was 92.02 percent with a maximum of 99.82 percent, surpassing the record of 99.67 percent maintained by Ma-k'ou. The production of semi-coke has also greatly increased.

Semi-coke from dry distillation of Ta-t'ung's coal has been successfully tested for iron smelting in the 20 to 50 cubic meter blast furnaces of the iron and steel plants of Pao-ting in Hopeh and Shih-ching-shan. The 13 cubic meter blast furnace of the machinery works of the Ta-t'ung Mining Administration has been using the Ta-t'ung semi-coke as fuel for more than half a year. Its production has been quite normal. The semi-coke produced by the Lu-tzu-kou petroleum works of Pao-te has been used in the 8 cubic meter blast furnace of the hsien's Ma-chia-tan iron works.

Using semi-coke, the iron smelting operation of Yang-kao-tien Chen [town] has improved from the production of white pig iron to grey iron. A rich source of fuel has thus been provided for intensive development of the iron and steel industry. The semi-coke is also a good fuel for civilian needs. Semi-coke produced in Chin-peï has been shipped to Tientsin and Chekiang areas.

The utilization of coal gas has further increased the sources of fuel. At present, 13 petroleum works in Chin-peï have used coal gas produced from dry distillation as fuel for boilers and carbonization "pots." A rough estimate shows that 150,000 yuan of fuel can be saved in a year. Moreover, this has also saved a lot of labor and improved health conditions.

Through the policy of existing through our own efforts, through training classes and by organizing field trips and actual training outside the district, we have trained, during the past year, as many as 2,000 technical workers in coal petroleum refining. As a result, production needs have been initially satisfied.

In the practice of extensive technical innovations and technical revolution, the petroleum refining works of T'ung-chia-liang mine now uses an aerial ropeway in the

loading of coal and the discharging of coke. This practice has improved production efficiency 6.5 times. The Yang-fang-k'ou North mine has built a dirt road with a gentle slope close to the "tui" furnace, and uses small flatcars in charging. This has greatly improved labor efficiency and lightened physical labor.

Comrades of the tar oil processing unit of the Yang-fang-k'ou North mine bravely and successfully experimented with asbestos rope in place of asbestos boards to make washer rings. They have thus shattered the superstition that processing could not be done without asbestos boards. The Hun-yuan-ch'eng-kuan petroleum works uses small 10 millimeter lump coal to carry out dry distillation without any effect on the oil extraction rate, thus overcoming the difficulty of using wet coal.

Standards of enterprise management are also being gradually improved. Many units have also established comparatively sound enterprise management systems enabling production efficiency to improve continuously and costs to decrease daily. The production costs at the Ma-ti-kou petroleum works of Ho-ch'u came down from 339 yuan per ton in July [1959] to 194.8 yuan per ton in September. The crude oil production cost of Erh-p'u petroleum works of Shuo-hsien came down from an average of 381 yuan per ton during the first half of 1959 to 185 yuan per ton in September. The unit cost of crude oil of the Yang-fang-k'ou North mine in September, was reduced to 160 yuan per ton, an actual decrease of 26.8 percent as compared to the month of August.

The above achievements have been the results of the Party's correct leadership, of persisting with political leadership, and of an intensive opposition to rightist deviation and slackening sentiments. They are results of extensive mass movements and extensive technical innovations and technical revolution. They are also the results of making arrangements without delay, checking without delay, and of holding production with one hand and marketing with the other, and of a continued strengthening and improvement of enterprise management.

Under the encouragement of the general line and the big leap forward, the coal petroleum refining industry of Chin-pei began construction planning in June 1958 of the

district's first coal petroleum refining works - the Ma-k'ou coal petroleum refining works. Since then, with vigorous support and assistance from above, we have adopted the method of building plants and training personnel at the same time. We also use working sites as class rooms and construction items as teaching materials to carry out training right on the spot. Through 42 days of actual learning and field work, we have trained 121 persons in "tui" furnace operation, gas analysis, and petroleum product processing. This has established a fertile foundation from which flowers of the coal petroleum refining industry can bloom everywhere in our district.

It was precisely because of our practising the method of "hen laying eggs," and the policy of coal petroleum refining development by the entire people, that by the middle of August, a period of less than two months, five coal petroleum works with individual capacities exceeding 300 tons, had been completed in the district.

As a result of the shattering of superstitions and the emancipation of thoughts, the staff and workers of Ho-ch'u Hsien invented a type of small external heating dry distillation oven which uses no power equipment of any kind (each oven treats 100 kilograms of shale). Because materials are easily obtainable, the equipment is simple and 136 ovens of this type have been built throughout the hsien.

The first coal petroleum refining leaping forward conference of Shansi Province called at Ta-t'ung on 16 August [probably 1958] strengthened the confidence of the people of the whole district in coal petroleum refining. A high tide of coal petroleum refining by the entire people was formed very rapidly. Not only were coal petroleum refining plants established by industrial systems, but they were also established by other government departments, schools, organizations, army units, commercial establishments, and the new defunct agricultural cooperatives. Their scale and speed of development have far exceeded original estimates.

CARRY OUT LARGE AREA HIGH QUOTA ABUNDANT PRODUCTION

[This is a translation of an extract from an article by the Ta-t'ung Mining Administration in Mei-t'an Kung-yeh (Coal Industry), Nos 28, 29, Peiping, 20 December 1959, page 54.]

Under the correct leadership of the Party committee members, the Ministry of Coal Industry and the Control Bureau, and by following the Party's general line for socialist construction plus the decisions of the Eighth Plenary Session of the Eighth Central Committee of the Party, the entire staff and workers of the Ta-t'ung Coal Mines have uninterruptedly opposed rightist deviation, built up their efforts, carried out increase-production, practise-economy movements, and made possible the achievement of new victories in a big leap forward for 1959.

Current achievements include overfulfillment of 1959's gross production value plan 30 days in advance and the mine run coal production plan, 22.5 days in advance. Production per unit working face has been increased 58.24 percent, rate of advance by 13.67 percent, cost of production lowered by 7.85 percent, and mine timber consumption lowered by 18.5 percent.

The output per unit working face for 1959 has placed the bureau in the category of "a large area high production 10,000 ton bureau." In November, the name of "high quota abundant production bureau" was realized when all eight mines of the bureau attained large area high production targets. Six of these eight mines also achieved the targets of "high quota abundant production mines". Moreover, a greater, better, and more overall leap forward was realized.

These new victories of big leap forward are shown not only in the overfulfillment in advance of production value and output plans and the strong forward progress of various targets, but even more important, the present big leap forward has established a favorable situation for a continued big leap forward. It will have a far reaching influence from now on.

The glorious achievements of 1959 are triumphs of the Party's general line. They are triumphs of the Eighth Plenary Session of the Eighth Central Committee of the Party. And they are also triumphs of political leadership, extensive mass movements, extensive technical innovations and technical revolution, of a strengthening of enterprise management, and of an intensive implementation of large area high production red banner emulation movements!

Through a year of actual production, we have realized the following:

1. A clear recognition of the situation and an ability to head in the right direction:

What we mean by recognizing clearly the situation and differentiate clearly the direction is to persist with political leadership and to apply with determination the political red line to every item of work under the Party's unified leadership. This also means regular and uninterrupted observation of situations. It means differentiation of wind direction according to the Party's general line for socialist construction of building up efforts, struggling for upper reaches, with quantity, speed, quality and frugality.

For example, after the victory of big leap forward of 1958, the slackening sentiment of "having a rest" was born in the minds of certain cadres in January and February of 1959. As a result, a decrease in production followed. After this type of ideology was criticized, output in March jumped to more than 32,000 metric tons from the 20,000 some tons in January and February. In the months of May and June, some cadres did not fully understand the import of the spirit of "causing plans to acquire a firm footing."

As a result, such timid sentiments as giving too much weight to concrete difficulties and too little value to favorable conditions, too much consideration to small things and too little consideration to the major situation, and paying too much attention to passive elements and too little attention to active elements rose again in their minds. They even felt that "the fewer the plans the better, and the more the difficulties the better."

Ultimately, they considered everything unreliable, and let their thinking deviate from the general line. Consequently, production dropped suddenly.

Under the leadership of the coal mine's Party committee member, we recognized this reverse current and instituted a continuing education program for the staff and workers. We implemented a determined criticism and "struggle" program against various tides of rightist thinking, and raised the slogan of "persisting with political leadership, building up revolutionary efforts, extensive mass movements, extensive technical innovations and technical revolution, conquering all difficulties, and of making into reality a greater, better and more over-all leap forward in order to overfulfill the tasks of the third quarter."

As a result, a new state of continued leaping forward began to take shape. After the resolutions of the Eight Plenary Session of the Eighth Central Committee of the Party concerning anti-rightist deviation, building efforts and the implementation of an increase-production, practise-economy movement were thoroughly carried out, the staff and workers were encouraged. A situation of immediate victory after the start of production, of victories every month, and of overall victory, continued to develop. For example, August output was 18.2 percent higher than that of July; September 19.15 percent higher than August; October 4.78 percent higher than September; and November 9.66 percent higher than October. The average daily output in November rose dramatically to more than 40,740 metric tons. The situation has been one of increased output every ten days.

The steady increase in production has not been due to any changes in material conditions. It has been the result of the anti-rightist deviation struggles, clear understanding of the situation, the setting of definite tasks, and a strengthening of confidence.

Consequently, we feel that only by recognizing the situation clearly and knowing clearly the direction of the wind, can we resist all types of reverse currents and guarantee a continued leap forward for production. We also feel that to leap forward we must build up our

efforts, and to build up our effort we must oppose right-
ist deviation. Only through uninterrupted opposition to
rightist deviation can we guarantee a continued leap for-
ward.

GREAT ACCOMPLISHMENTS IN COAL INDUSTRY TECHNIQUES

[This is a translation of extracts from an article written by JEN Pi-shao, Head of the Technical Department of the Ministry of Coal Industry, in Mei-k'uang Chi-shu (Coal Techniques), No 21, Peiping, 1 November 1959, pages 9-10.]

Hydraulic mining is an advanced technique used by the coal mining industries of the world. Compared with other mechanical coal mining methods, it has many superior points. It is a comparatively "all around advanced technique for the carrying out of the construction policy of quantity, speed, quality and frugality."

After we learned this most advanced production method from the Soviet Union in 1956, we started two experimental mining districts in the P'ing-hsiang and K'ai-luan coal mines, and have already acquired about two years of experience.

After an on-the-spot experience exchanging and mobilization conference was called at the K'ai-luan Coal Mines in July 1958, various scientific research institutes of the Ministry of Coal Industry, the Institute (yuan) of Designing, and scientific research personnel of higher institutions and schools of coal mining united closely with production plants and mines to carry out an extensive mass movement.

Under the Party's leadership, field workers and engineering technical personnel developed their sky-rocketing spirit and their incomparable intelligence. Within the short span of one year, they have brought about a flying development, in China, of this world's highest technique - hydraulic coal mining.

In 1957, there were only two hydraulic coal mining districts in China. By 1958 this figure had increased to 46. By September 1959, the number had increased to 63. The number of hydraulic mine shafts has increased from two pairs in 1958 to 12 pairs at present. It is estimated

that the daily production level of the first hydraulic mine shaft - the air shaft of K'ai-luan's T'ang-chia-chuan Mine - will be over 6,000 metric tons by the end of 1959 and will become the largest hydraulic mine shaft in China.

Output from hydraulic coal mining has also had an uninterrupted flying development. The output from hydraulic mining in 1957 was only 62,000 metric tons. However, it leaped to 1,670,000 tons in 1958 - an increase of 26 times. Accumulated output, from January through September 1959, has already passed 5,100,000 tons. China's total daily production from hydraulic mining in September was over 230,000 tons.

Simultaneous with the rapid increase of coal output from hydraulic mining, problems concerning the four major production links of hydraulic coal mining were solved - the technical problems of coal breaking, haulage, hoisting, and dewatering and drying - and the requirements of systematization, normalization, and logical arrangement have been realized. These have established a stable foundation for the future development of hydraulic coal mining.

1. Hydraulic coal breaking: through one year of wide experiments on coal seams under different geological conditions, we have learned some rules of hydraulic coal mining, with greater success in mastering the mining methods in inclined and gently inclined thin and thick coal seams. The up the slope funnelled room type [overhead stopes] of coal mining, and the strike direction shortwall small section coal mining method have been separately and extensively developed in the K'ai-luan, Huainan, P'ing-hsiang and Hsu-chou coal mines. A definite amount of experience has also been accumulated on the inclined sub-slicing, upward, sand filling, strike direction longwall hydraulic mining method tried out in the Fu-shun Coal Mine.

Of the various models of water guns used in hydraulic coal breaking, which we have designed and manufactured ourselves, the better ones are the model 355 used in the mining of thin coal seams, the models 266 and 755 used in medium thick and thick coal seams, and the T'ang-chia-chuan model 1, etc. These have been used in most coal mines.

Moreover, based on such factors as the stability of hanging walls, the thickness of coal seams, and the hardness of the coal, their operating methods have been better mastered and an even greater amount of coal breaking experience have been compiled.

2. Underground hydraulic haulage: the technical aspects of haulage either by natural flow without pressure or by pipeline under pressure have already been smoothed out. For haulage under pressure in roadways, low-lift, high volume coal-water pumps have been designed and manufactured. They have been used in many mines. The one-stage hoisting of coal-water pumps through underground roadways, and the shaft adopted by the T'ang-chia-chuan hydraulic mine, have simplified the haulage system even more.

3. Hydraulic hoisting: this operation employs coal-water pumps and coal feeders, but principally the coal-water pump on the basis of current conditions. After one year of production experience, there are now in China five types of coal-water pumps with good characteristics. These have all been designed in China.

Moreover, they possess structural features of creative development. These five types are models K'ai-luan-II, Ku-wong-I, Feng-feng-I, Huai-nan-V and Ku-wong-II. The range of their lifts is 40 - 100 meters. The highest flow is 420 cubic meters. The lump size they can carry is from 10 - 60 millimeters. The original problem of abrasion has already been solved through patch welding or lining.

There are now eight types of coal feeders in China. Three of these have already been used in actual production. The water wheel ("shui-ch'e") type coal feeder of P'ing-hsiang Coal Mine is a special creation of China. It has a daily capacity of 400 to 800 tons. It is small in volume, simple in construction, and easy to operate. The "jar" ("kuan") type coal feeder of Fu-shun has a daily hoisting capacity of 1,500 - 2,000 tons.

Its hoisting height is as much as 510 meters. In the light solution hoisting of the T'u-t'ang shaft of Ta-t'ung, the lump size hoisted exceeds 100 millimeters.

It hoists 300 to 400 tons of coal daily, and the hoisting height is 68 meters. Based on the present situation, the two first mentioned coal feeders have the best future and will be important in deep shaft hydraulic hoisting, and in preserving coal in large lumps.

4. Dewatering and drying: when coal of over 0.75 millimeters in size is dewatered through a vibrating dewatering screen or a scraper, its external moisture content is lowered to 10-15 percent. The vertical centrifugal dewatering machine designed and trial manufactured by the Scientific Institute of Coal of T'ang-shan, treats 0.75 - 6 millimeter coal and can lower its moisture content to 7-8 percent. Its hourly capacity is 30 - 40 tons.

The results of the black catalyst trial used by Yang-ch'u-ho of Feng-feng to improve dewatering are also good, with moisture content lowered by 3-5 percent. By the use of these dewatering methods on coal with lump sizes of over 0.75 millimeters, freezing will not take place even in severely cold regions.

For coal sludge below 0.75 millimeters, the T'ang-chia-chuan hydraulic mine of K'ai-luan uses a hydraulic cyclone to condense the volume of the coal sludge. It then uses vibrating screens to dewater. This reduces the moisture content to about 25 percent. Generally 70-80 percent of the coal sludge can be retained, thus decreasing the work and volume of settling tanks.

The Peiping Scientific Institute of Coal cooperated with the Hao-kang Coal Mine in experimenting with a revolving tube type drying oven with very good coal sludge drying efficiency. When the moisture content of the feed is 22 percent, the moisture content in the product seven percent. Although its present capacity is small, improvement can be made with further efforts.

All of the above dewatering methods apply to cold, freezing regions. In provinces south of the Yangtze River, natural drying will be sufficient. Because there is no problem of freezing, its prevention is not necessary.

Although hydraulic coal mining has been through only a short year of testing and only preliminary experience has been acquired, its superiority has already been proven.

Some comparisons with regular mechanical coal mining are listed below:

(1) In the production of working faces, take T'ang-chia-chuan mine's second quarter of 1959 as an example. The average monthly output of its hydraulic-mining working face was 24,010 metric tons. This is 85 percent higher than the output of the mine's regular mechanical working faces under similar conditions.

(2) A new mine will reach its designed capacity quickly. It took the Yang-ch'u-ho hydraulic mine of Feng-feng Coal Mines only three months to reach its designed output after it started production.

(3) Labor productivity is high. Average efficiency per man shift of the three hydraulic mining districts of Huai-nan Coal Mines, during the first half of 1959, was 14.8 tons, 218 percent higher than the efficiency of the mine's regular mechanical retreat mining.

(4) The consumption of mine timber is small, approximately 20 percent of the consumption of regular mechanical mining. The average timber consumption per 1,000 tons of coal produced by all hydraulic mining in China during the first half of 1959 was only eight cubic meters, while the same consumption of regular mechanical mining was 23.7 cubic meters.

(5) The cost of production is low, about 35-40 percent of that of ordinary coal mining methods.

(6) Safe production is truly achieved.

(7) Only a single working step is involved and it is simple.

To become well trained in most of the mechanical coal mining work would require one year's time. Hydraulic mining requires only half a year.

(8) Working hours are more efficiently utilized. The production time of a single day may exceed 20 hours. Moreover, it is the best method for the organization of three shift continuous coal production, and for continued high production.

Very few shafts were constructed by the old China. The few pairs of shafts that were constructed were contracted to foreign companies for both designing and the construction. To utilize China's cheap labor force, manual operations were adopted widely and construction techniques were extremely backward.

After liberation, and in a situation of large scale mining construction, a strong designing force and various specialized construction forces of our own were quickly established. Large quantities of mining construction equipment were added. The degree of construction mechanization in the areas of shaft sinking, hoisting, rock loading, etc. has reach 75-100 percent.

During the six year period of 1954-59, a pair of new mine shafts was completed for actual production on an average of about every four days. In actual practice, we have gradually mastered new construction techniques and acquired considerable amount of rich experience including some creative developments.

On the basis of the big leap forward of 1958, 22 advanced experiences were compiled including the wide application of such rapid construction experiences as increasing air pressure, hole drilling with multiple drills, large diameter drill hole blasting, prefabricated large construction blocks [like prefabricated concrete blocks], and parallel and overlapping operation of multiple working steps.

Under a state of extensive mass movements, mine construction period has been continuously shortened. The construction period of a pair of mine shafts designed for 210,000 tons annual capacity, requires only a year. Mine shafts of 300,000 ton capacity take on the average but 19.7 months to complete. The construction period of the 900,000 ton designed annual capacity Hsieh-chia-chi No 2 shaft of Huai-nan was only 24

Moreover, its output reached designed production capacity the second year after it started operations. The production task of this shaft for 1959 is now exactly twice its designed production capacity.

The No 7 shaft of P'ing-ting-shan of Honan Province is a large scale mine shaft with an annual designed production capacity of 900,000 tons. Only 20 months were required for its completion, and the start of production, establishing a record of high speed shaft construction in China. The average investment per ton of coal output capacity has been reduced from 33 yuan during the first Five-Year Plan period to 22 yuan, a decrease of one third.

In the field of special construction techniques, a new method of shaft sinking by freezing has been mastered, with the assistance of Soviet and Polish specialists. This technique has now received wide-scale application. A record of 85.56 meters per month was established in the sinking of the air shaft at T'ang-shan. In the construction of the Fan-ko-chuan main shaft, a record of 80 meters in 21 days was established. Moreover, a new technical development has come out of this construction.

In 1958, when the air shaft of Lieh-shan Coal Mine in the Huai-pei coal field of Anhwei Province had to penetrate 40-80 meters of surface and shifting sand strata, scientific research personnel cooperated closely with the construction field to adopt the principle of bridge pier vibration pipe sinking employed in the construction of the Yangtzu River Bridge of Wuhan. They sank the shaft successfully.

This principle was also applied in the sinking of the main shaft of Chang-ta-chuan. The shifting sand strata was penetrated smoothly. This is an important innovation in special construction technique. It has opened a new road for future shaft sinking in thick surface strata and shifting sand strata.

In other words, under the correct leadership of the Chinese Communist Party and Chairman MAO, and under the beacon of the general line, the spirit of the entire staff and workers of the coal mining industry has been exhilarated, their determination elevated, and they have united bitter efforts with ingenious efforts. Not only in coal production, but also in techniques of production construction, they have made great achievements and found the road suitable to the high speed development of China's coal industry.

With the encouragement of the resolutions of the Eighth Plenary Session of the Eighth Central Committee of the Party, an even greater power will be demonstrated, rightist deviation will be opposed thoroughly, and efforts will be more fully built up to enable the coal industry to maintain its high production and continue its big leap forward. In the face of these facts, the circulating of rumors and slandering by all reactionary and rightist deviation opportunist elements, both domestic and foreign, will undoubtedly be shattered to pieces!

HONORARY LIST

[This is a translation of a list of "high production, red banner" coal mining teams for March through September 1959, published in Mei-k'uang Chi-shu (Coal Mining Techniques), No 21, Peiping, 1 November 1959, pages 12-13.]

High Production, Red Banner Coal Mining Teams, March - September 1959

| <u>Mining Administration</u> | <u>Mine, Team, Unit</u> | <u>Major Targets, March - September</u> | | |
|----------------------------------|--|---|--|---|
| | | Average monthly output (tons) | Effi- ciency (tons/ man shift) | Mine timber (M ³ / 1,000 tons) |
| Ching-hsi | Ch'eng-tzu Mine, 213 working face | 22,377 | 6.863 | 3.62 |
| K'ai-luan | T'ang-chia-chuan Mine, 2172 working face | 20,945 | 3.586 | 19.08 |
| | T'ang-shan Mine, 1588 working face | 20,127 | 4.611 | 18.95 |
| | T'ang-chia-chuan Mine, 2192 working face | 26,854 | 7.385 | 2.8 |
| | T'ang-chia-chuan Mine, 4090 working face | 20,960 | 4.584 | 25.91 |
| | Lin-hsi Mine, 5851 working face | 20,029 | 5.02 | 23.97 |
| | Lin-hsi Mine, 7791 working face | 20,039 | 6.62 | 22 |

Table continued--

| | | | | |
|-----------|--|--------|--------|-------|
| | Chao-ko-chuan Mine, 8191 working face | 24,426 | 5.987 | 26.7 |
| | Lin-hsi Mine, 4091 working face | 20,800 | 5.58 | 20 |
| | T'ang-shan Mine, 9828 working face | 26,714 | 10.262 | 3.08 |
| | Chao-ko-chuan Mine, 7556 working face | 25,292 | 6.369 | 18.4 |
| | T'ang-chia-chuan Mine, 5199 working face | 26,259 | 6.481 | 26.33 |
| | T'ang-chia-chuan Mine, 2196 working face | 31,629 | 14.173 | 0.29 |
| | Chao-ko-chuan Mine, 7398 working face | 21,901 | 4.625 | 22.4 |
| | T'ang-chia-chuan Mine, 2176 | 31,372 | 12.484 | 0.6 |
| Feng-feng | No 2 Mine, Red Banner Mining Team | 12,800 | 6.10 | -- |
| Han-tan | Chang-ts'un Mine No 1 shaft, mining team of No 5 main roadway | 23,589 | 6.074 | 13.42 |
| Ta-t'ung | Yung-chia-chuan, HAN Fu mining team | 18,547 | 8.802 | 2.03 |
| Hsi-shan | Pai-chia-chuan, Red Banner mining team | 32,930 | -- | 3.64 |
| Fen-hsi | Nan-kuan Mine, Youth ("ch'ing-nien") Mining Team | 21,433 | 6.8 | -- |

Table continued--

| | | | | |
|----------|---|-----------------------|-------|--------|
| Fu-shun | Lung-feng Mine, 231 shift | 20,500 | -- | -- |
| | | (January - September) | | |
| | Lung-feng Mine, 421 shift | 25,238 | 7.8 | -- |
| | | (January - September) | | |
| Pen-ch'i | Lau-hu-t'ai Mine, No 1 district, No 2 shift | 20,092 | 5.389 | 19.352 |
| | Lung-feng Mine, 512 shift | 20,942 | 4.631 | -- |
| | Pen-ch'i Mine, No 3 Mining district, 3312 face | 25,409 | 8.261 | 33.92 |
| | Pen-ch'i Mine, No 2 mining district, 2252 face | 21,750 | 7.634 | 36.57 |
| | Ts'ai-t'un Mine, WU Hung-fa mining team | 21,078 | 7.046 | 28.55 |
| Shuan-ya | Ling-tung No 6 shaft, 614 mining team | 15,733 | 5.364 | 31.98 |
| Huai-nan | Hsieh-erh Mine, "ts'ai" third team | 20,123 | 7.05 | 21.81 |
| | Hsieh-san Mine, "Surpass England" hydraulic mining team | 21,618 | 14.17 | 1.7 |

Table continued--

| | | | | |
|--------------|--|--------|--------|----------------|
| | Hua-chia-kang Mine, hydraulic mining team | 25,257 | 12.764 | 1.39 |
| | Hsieh-san Mine, "Surpass America" hydraulic mining team | 23,966 | 16.05 | 2.31 |
| P'ing-hsiang | Wang-chia-yuan Mine, No 4 shaft, 901 working face | 21,898 | 4.996 | 14 |
| Tzu-po | Hsia-chuan Mine, No 1 vertical shaft, "ts'ai" No 2 team | 10,583 | 4.706 | 11.18 |
| | Lung-ch'uan, "ts'ai" No 1 team | 9,076 | 4.15 | 20.48 |
| | (thin coal seam) | | | |
| | Hung-shan Mine, No 54 mining team (thin coal seam, coal seam production capacity below [number missing] tons/m ² | 9,360 | 4.66 | 10.8 |
| Tzu-hsing | No 2 working site, Nan-p'ing stope, "Production" No 7 team, 4022 working face | 15,815 | 4.72 | 21 |
| | | | | (March - July) |

High Speed, Red Banner Advancing
Work Teams, March - September 1959

| Mining Administration | Mine, Team, Unit | Average monthly advancing rate per opening, Mar.-Sept. Mar. - Sept. (meters) | Average advancing effi- ciency, Mar.-Sept. meters/ man-shift | Type of road- way |
|--------------------------|---|---|---|----------------------------|
| Ching-hsi | Men-t'ou-kou Hsi-shan Mine, Rock Advancing No 18 team | 101.6 (Mar.-Aug) | -- (work stopped in Sept.) | rock |
| " " | Mu-ch'eng-chien, No 401 hori- zontal tunnel rock advancing team | 87.7 | 0.098-0.132 | rock |
| K'ai-luan | Lin-hsi Mine, WEI Hung-liang advancing team | 252 | 0.392 | coal |
| " " | Chao-ko-chuan Mine, FAN Wen- chou advancing team | 278 | 0.373 | coal |
| " " | Lin-hsi Mine, No 1 development area, HO Tsun-lu ad- vancing team | 182 | 0.191-0.307 | coal |
| " " | Lin-hsi Mine, WANG Ch'un-chen advancing team | 107 | 0.166 | rock |
| " " | T'ang-chia-chuan Mine, WANG Ch'ao- hsu advancing team | 308 | 1.105 | coal |

Table continued--

| | | | | |
|-----------|--|-------------------------------|-----------------|--------------------------------|
| K'ai-luan | T'ang-chia-chuan Mine, Ch'i-hai advancing team | 254 | 1.058 | coal |
| " " | Chao-ko-chuan Mine, development area 9001 team | 105.5 | -- | rock |
| " " | Lin-hsi Mine, K'ANG Lien-hsi advancing team | 278.6 | 0.492 | coal |
| " " | T'ang-chia-chuan Mine, WANG Chiu-sheng team | half coal 202, coal 275 | 0.387- 1.108 | half coal half rock rock |
| " " | T'ang-chia-chuan Mine, MENG Fan-fu team | 170.1 | 0.259 | half coal, half rock |
| Feng-feng | No 3 Mine, WU Erh-yang advancing team | 281 | -- | coal |
| " " | No 5 Mine, "May 4 Youth" No 1 team | 282 | 0.93 | coal |
| " " | No 5 Mine, "May 4 Youth" "chueh" No 2 team | 280 | 0.28- 0.57 | half coal, half rock |
| " " | Yao-chuan Mine, Red Banner advancing team | 269 | 0.318 | coal |

(Mar.-Sept.)

Table continued--

| | | | | |
|-------------|---|--------|---------------------|-------------------------|
| Feng-feng | No 2 Mine, CHANG Ssu-hsiao advancing team | 330 | 0.61 (Mar.-Sept) | half coal, half rock |
| " " | No 2 Mine, "Youth" advancing team | 245 | 0.56- 0.98 | half coal, half rock |
| Han-tan | Wang-feng Coal Mine, "Rocket" team | 181 | -- | half coal, half rock |
| Ta-t'ung | No 2 Mine, CHANG Wan-fu advancing team | 396 | 0.662 | half coal, half rock |
| " " | No 3 Mine, CHAO Fu-ch'ing advancing team | 371.3 | 0.568 | half coal, half rock |
| " " | T'ung-chia-liang Mine, MA Kuo-fu unit (single opening) | 251.16 | 0.58 | half coal, half rock |
| Yang-ch'uan | No 3 Mine, No 2 shaft, "advancing" No 2 unit (single opening) | 256.8 | 0.564 | coal |
| " " | No 3 Mine, No 1 shaft, "advancing" No 5 team | 280 | 0.76 | coal |
| Fen-hsi | Fu-chia-t'an Mine, "high speed advancing" No 5 team | 267 | 0.765 | coal |
| Fou-hsin | Hsin-ch'iu Mine, "eight one" advancing team | 213.5 | -- | half coal, half rock |
| " " | P'ing-an Mine, WANG Lan-t'ang advancing team | 178.1 | -- | half coal, half rock |

| | | | | |
|--------------|--|---------------------|-----------------|-------------------------|
| Pei-p'iao | T'ai-chi Mine, "Youth" advancing team | 315 | 0.5 | rock coal (?) |
| " " | San-pao Mine, No 4 pit, "Glory" team | 123.3 | 0.2 | rock |
| Liao-yuan | Hsi-an Mine, No 9 advancing team | 11.27 | 0.12- 0.14 | rock |
| Hao-kang | Hsing-shan Mine, No 22 advancing team | 162 | -- | half coal, half rock |
| Chi-hsi | Heng-shan Mine, TS'UI Kuo-shan advancing team | 351 | 0.38 | half coal, half rock |
| " " | Hsiao-heng-shan Mine, No 640 advancing team | 261 | -- | half coal, half rock |
| Huai-nan | Hsieh-1 Mine, "advancing" No 5 team | 200 | -- | half coal, half rock |
| Chiao-tso | Wang-feng Mine, WANG Chin-sheng advancing team | 268.6 | 0.72 | coal |
| Hao-kang | Ch'en-chia-chuan Mine, CH'I Ha-chih advancing team | 250 (Jan.-Sept.) | 0.74 | coal |
| " " | Yang-chia-chuan Mine, KUAN Te- hsi advancing team | 331.4 | 0.68 | coal |
| Nan-t'ung | LU Ch'ang-hua advancing team | 365 | 0.82 | coal |
| T'ung-ch'uan | No 1 Mine, CHANG Chin-chu advancing team | 84.5 | 0.069- 0.148 | rock |

Table continued--

T'ung-ch'uan No 1 Mine, LI Chen- 280.23 0.361- half coal,
hsing advancing team 0.465 half rock

High Efficiency, Red Banner Power
Shovels, March - September 1959

| Mining Administration | Mine, team, unit | Average monthly excavation volume, March - September (cu. m./unit buc- ket capacity) | Type of over- burden removed |
|--------------------------|---|--|---------------------------------------|
| Fou-hsin | Hsin-ch'iu Open Pit Mine, No 120 excavation power shovel | 37,483 | excavating earth and rocks |
| " " | Hai-chou Open Pit Mine, No 99, exca- vating power shovel | 38,843 | excavating earth and rocks |
| Fu-shun | West Open Pit Mine, No 59 excavating power shovel | 37,500 | excavating earth and rocks |

PRELIMINARY ANALYSIS ON THE PROMOTION
OF THE FOUR-SHIFT OVERLAPPING
OPERATION IN RETREAT WORKING FACES

[This is a full translation of an article submitted by CHIA Yueh-ch'ien and KUNG Miao in Mei-k'uang Chi-shu (Coal Mining Techniques), No 21, Peiping, 1 November 1959, pages 14-16.]

A. The Origin and Significance of the Four-Shift Overlapping Operation

The four-shift overlapping operation is a new form of production organization. It was created by the coal mining staff and workers during the big leap forward of 1958. During the rapid increase of coal output and the flying development of the coal industry in 1958, the large coal mining staff and workers felt that the existing production organization of "two-shift coal extraction and one-shift preparation for one cycle of three shifts each day" could not properly meet the new big leap forward situation and develop the production capacity of the working faces.

Consequently, under the correct leadership of the Party, the large staff and workers shattered their superstitions and demonstrated their communist style of dare to think and dare to act by breaking through in many areas, the old system of "one cycle of three shifts every 24 hours" and by putting into practice such forms of organization as two cycles and three cycles every 24 hours. As a result, production was greatly increased and costs lowered. Although these new types of production organization fully developed the production capacities of working faces and represented a noted improvement over the previous production organization, the problem of how the staff and workers could further combine labor and leisure at the working faces was not completely solved.

Consequently, on the foundation of this leap forward, the respective administrations and mines creatively put into practice, one after another at Feng-feng and Tzu-po mining administrations, the new form of production organi-

zation, the four-shift overlapping operation, thus organizationally strengthening the practice of two cycles every 24 hours with noted results.

This new form of organization has been listed by the Ministry of Coal Industry as one of "18 production promotions." However, the promotion of the four-shift overlapping operation has not been smooth sailing all the way. On the contrary, it has been carried out only by eliminating rightist deviation and conservative ideologies, by overcoming difficulties in management and techniques, and by solving key problems. These have been the sole means by which the four-shift overlapping operation form of organization has developed, and been promoted successively by Fu-shun, K'ai-luan, Yang-ch'uan and Chiao-tso mining administrations.

It was particularly during the second criticizing and comparing conference of the national coal industry's large area, high production, red banner competition of 1959, that the experience of the four-shift overlapping operation was systematically summarized.

Experience has proved that the four-shift overlapping operation is an excellent form of production organization for the coal mines. It represents an important revolution in the production organization of the coal industry. It is different from the general production organization and its greatest advantage lies in the practice of combining labor with leisure and in reducing the hours workers spent underground. This improves the health of the workers and has a decisive effect on the improvement of workers' political and cultural levels.

Moreover, it has raised production and efficiency and lowered costs. In particular, it has made possible lasting development of the large area, high production, red banner emulation movement. The four-shift overlapping operation is, therefore, an extremely effective method for high speed development of the coal industry and for its continued big leap forward.

The essence of the four-shift overlapping operation is the changing of the previous three-shift working system of two shift coal extraction and one shift preparation to a four shift working system. The 24 hours of the day are

divided into four shifts, each shift still maintaining its eight hours of operational time. However, the first two hours of each shift overlap the work of the previous shift at the working face.

In this manner, from one fourth to one third more coal producing time is added to the space of the original working face. This form of production organization actually changes the working time of the day from 24 hours to 32 hours. Most of the major production processes at the working face are changed from the past single working step to a multiple step. Parallel overlapping operations and the effective coal extraction time during the day are correspondingly increased. This increase greatly the output of unit working faces.

B. Forms of Current Four-shift Overlapping Operation

According to incomplete statistics, 11 mining administrations or mines in China had carried out the four-shift overlapping operation as of 20 October 1959. The best results have been achieved by the Fu-shun, Yang-ch'uan, K'ai--luan and Tzu-po mining administrations. The Yang-ch'uan administration has 17 working faces which practice the four-shift overlapping operation. These include all 11 retreat mining working faces of the No 4 mine.

After the operation was carried out, the net working hours of workers underground were reduced 1.5-2 hours. The Fu-shun Mining Administration has six working faces practicing the four-shift overlapping operation, with noticeable results.

The working time of workers underground has been reduced from about ten hours to eight hours. The goal of combining labor with leisure has been achieved, guaranteeing workers plenty of rest time. Efficiency has been improved and costs lowered without any addition of personnel.

The Tzu-po Mining Administration has practiced the four-shift overlapping operation longer and economic results have also been considerable.

The K'ai-luan coal mines originally had only one working face practicing this operation. However, during the period of the Second criticizing and comparing conference of the large area, high production, red banner competition, based on the spirit directed by Minister Chang of the Ministry of Coal Industry, a high tide of expanding the four-shift overlapping operation was rapidly stirred up. At present, 15 of its working faces are practicing this operation. With the exception of the hydraulic mining working face, all 11 dry mining working faces of K'ai-luan's T'ang-chia-chuan mine are now practicing the four-shift overlapping operation.

Others, such as Feng-feng, Chi-hsi, Chiao-tso, T'ung-hua, Ying-ch'eng, Hsin-wen and Tsao-chuan mining administrations or mines, have also promoted the four-shift overlapping operation.

Judging from the situation of the current practice throughout China of the four-shift overlapping operation, it can generally be divided into three different forms:

1. Three shift coal extraction and one shift preparation: there is an overlap of two hours between shifts for a total overlapping time of eight hours a day. Its special characteristic is the concentration of personnel from two shifts into one shift during overlapped hours to carry out coal production. This utilizes the highest peak of coal output for each shift. At the same time, preparation work is carried out and other problems taken care of.

Examples of this form of four-shift overlapping operation are the No 5 mining district of the Sheng-li Mine of Fu-shun Mining Administration, the 5199 working face of K'ai-luan Coal Mines' T'ang-chia-chuan mine, the Chang-pa [may also signify the thickness of the coal seam of 1.8 chang] coal seam working face of Yang-ch'uan No 4 mine, etc.

2. Two shift coal extraction and two shift preparation: the coal extraction shifts overlap either two or four hours with the total overlapping time of eight hours a day in either case. For example, the coal extraction shifts and the preparation shifts of the No 1 mine of Feng-feng Mining Administration overlap two hours. In

the 9009 working face of Hsia-chuan mine of Tzu-po Mining Administration, there is a four hour overlap between the first preparation shift and the first coal extraction shift, and between the second preparation shift and the second coal extraction shift.

3. Three shift coal production: the time of overlap between preparation shifts and coal extraction shifts is not set. Its special characteristics consist of 22 hours of coal production, two hours of conveyer moving, checking and repair work, and an indefinite time of overlap for the shift engaged in breaking down the roof. The Wang-feng mine and Li-feng mine of Chiao-tso Mining Administration are examples of this type of operation. [Since diagrams for the above three sections are to be ignored, an attempt has been made to explain the operation more clearly in wording other than the original. If the original had been followed faithfully, the manner of operation would be unclear.]

C. Major Results of the Practice of the Four-shift Overlapping Operation

Noted results have been achieved with the practice of the four-shift overlapping operation by 11 administrations or mines of China. Achievements in major technical and economic targets are listed in the table of comparisons below.

Aside from economic results as shown in the table, the four-shift overlapping operation has quickly taken root among the masses of worker due to its better coordination of labor and leisure. It has received enthusiastic welcome and support from the entire coal mining staff and workers and their families. For instance, the wide reaction of the workers of Yang-ch'uan No 4 mine's "Satellite" coal mining team is that the practice of the four-shift overlapping operation guarantee ample time for rest and learning and creates favorable conditions for political and cultural learning. We see from this that the practice of the four-shift overlapping operation is not only extremely superior economically, but it also has the wide support of the masses.

Table of Comparison of Major Technical
and Economical Targets Before and After
Practice of Four-shift Overlapping Oper-
ation

| | "Satellite" team, Yang-ch'uan No 4 mine | | | 1530 working face, 2nd mining district, Feng- feng No 1 mine | | |
|---|---|--------|------------------------|--|---------|------------------------|
| | Before | After | Compa- rison (%) | Before | After | Compa- rison (%) |
| Coal seam (meters) | 1.2 | 1.2 | - | 1.0-1.3 | 1.0-.13 | - |
| Working face length (meters) | 100 | 100 | - | 50-80 | 50-80 | - |
| Monthly output (tons) | 9,616 | 15,464 | +61 | 9,507 | 12,113 | +28 |
| Average daily output (tons) | - | - | - | - | - | - |
| Monthly advancing rate (meters) | 73 | 88.3 | +21 | - | - | - |
| Efficiency (tons/ man shift) | 5.656 | 8.156 | +44 | 5.66 | 7.04 | +25 |
| Timber consump- tion (m ³ /1,000 tons) | 12 | 11.8 | -2 | 7.4 | 10.2 | - |
| Direct cost (yuan/ton) | 1.676 | 1.374 | -18 | - | - | - |

Table continued--

9009 working face, Hsia-chuan mine, Tzu-po Mining Administration No 5 mining district, Sheng-li mine, Fu-shun Mining Administration

| Before | After | Comparison (%) | Before | After | Comparison (%) |
|--------|--------|----------------|---------|---------|----------------|
| 0.65 | 0.65 | - | 2.2-2.5 | 2.2-2.5 | - |
| 83 | 95 | - | 80 | 80 | - |
| 5,829 | 10,715 | +83.8 | - | 15,000 | - |
| - | - | - | 465 | 630 | +36 |
| 76.5 | 118 | +54.3 | - | - | - |
| 3.5 | 4.62 | +32 | 5.92 | 7.01 | +18 |
| 16.77 | 15.83 | -5.6 | - | - | - |
| 2.228 | 1.915 | -14 | - | - | - |

D. The Eight Advantages of Four-shift Overlapping Operation

1. Reduces substantially the ill use of workers' capabilities: with eight hours of overlapping each day, 32 hours work volume is done in 24 hours thus fully utilizing working time. Generally, 2-4 hours of coal production time is added. For instance, in the case of the No 5 mining district of Fu-shun Mining Administration's Sheng-li mine, there used to be 1-2 hours during the time of changing shifts when coal could not be produced. After the practice of four-shift overlapping operation, however, 4-6

hours of coal production time has been added each day. In the case of Feng-feng Mining Administration's No 1 mine and Yang-ch'uan's No 4 mine, 2-4 hours of coal production time has been added each day.

2. Increases production: output of most of the working faces has been increased by 30 - 80 percent. Monthly production by the "Satellite" team of the No 4 mine of Yang-ch'uan Mining Administration was 9,616 metric tons before the four-shift overlapping operation was put into practice. With this operation, the monthly production has been increased to 15,464 tons, a rise of 61 percent. The daily output of 465 tons of the No 5 mining district of the Sheng-li mine of Fu-shun Mining Administration has been raised to 630 tons, an increase of 36 percent. The monthly output of the 9009 working face of Tzu-po Mining Administration's Hsia-chuan mine has been raised from 5,829 tons to 10,715 tons, an increase of 83.8 percent.

3. Improves coordination of labor and leisure. The operation guarantees the workers ample time for resting and provides favorable conditions for political and cultural learning. Furthermore, workers' attendance rate has been improved, generally by about 5 - 10 percent. For instance, the underground working time of workers of the No 5 mining district of the Sheng-li mine of Fu-shun Mining Administration has been reduced by two hours. Its worker attendance rate has been raised from 92.7 percent to 97.6 percent. The underground working time of most workers of the No 4 mine of Yang-ch'uan Mining Administration has been reduced by 1.5 - 2 hours, while its worker attendance rate has been increased from 80 percent to 90 percent.

4. Improves efficiency: the efficiency of retreat mining working faces has generally been raised 15 - 30 percent. The efficiency of 1530 working face of the No 1 mine of Feng-feng Mining Administration has been improved from 5.66 tons per man shift to 7.04 tons per man shift, an improvement of 25 percent; that of the No 5 mining district, Sheng-li mine, Fu-shun Mining Administration from 5.92 tons per man shift to 7.01 tons per man shift, an improvement of 18 percent and that of the "Satellite" team of No 4 mine, Yang-ch'uan Mining Administration from 5.656 tons to 8.156 tons per man shift, an increase of 44 percent.

5. Lowers costs: the cost of production at the working faces has generally been lowered by 10-15 percent. The direct cost of the "Satellite" team of the No 4 mine of Yang-ch'uan has been reduced from 1.676 yuan per ton to 1.374 yuan per ton, a decrease of 18 percent; and the direct cost of 9009 working face, Hsia-chuan mine, Tzu-po Mining Administration from 2.228 yuan per ton to 1.915 yuan per ton, a reduction of 14 percent.

6. Achieves even production: because of the tighter utilization of working time, there is more coal production time at the working faces during the change of shifts. In this manner, a continuous and uninterrupted coal production at the working faces from the start of a shift to the time of shift changing is guaranteed. Moreover, even production is achieved. This also creates favorable conditions for haulage and hoisting.

Because of this even coal production, the overloading of electric conveyers has decreased and, consequently, electric conveyor accidents have been greatly reduced. Concentrated and overloaded hoisting at certain hours has also been avoided.

7. Strengthens unification and fortifies great Communist cooperation: the spirit of great unification and great cooperation between shifts, between units, between different types of work, and between coal extraction and haulage has been established. On any problem which may arise, there is mutual support and mutual cooperation, eliminating the old attitude of mutually shirking responsibility and delaying when problems were encountered.

Tasks have been carried out with unification and a single mind. For instance, the Chang Ying-ch'i and Sun Pao-t'ien units of the 8153 working face of K'ai-luan's Lin-hsi mine used to exchange harsh words regularly because of conflicts in the use of materials and working conditions. Now they mutually assist each other and jointly create favorable conditions. A closer unification between shifts has been achieved.

8. Creates a favorable conditions for safe production: because of equalized coal production, signs of rushing production have been eliminated. Production has become orderly, the quality of engineering work has improved, the work is more closely knit and energy more concentrated. In addition and as a result, safe production has been achieved.

E. Few Points of Opinion

With regard to the problem of selecting a form of four shift overlapping operation, we submit for discussion and study following opinion based on a preliminary analysis of experiences throughout China in the promotion of the four-shift overlapping operation.

1. From what we can see at present, the first form, the one of three shift coal production, one shift preparation, two hours of overlap between shifts, and eight hours of total overlapping a day as practiced by Fu-shun, K'ai-luan and Yang-ch'uan administrations, is a better organization. Its advantages are more pronounced:

a. During the overlap time of the two shifts, personnel is concentrated in one shift for coal production. This results in maximum coal output for each shift. Moreover, preparation work is fully and properly done, and other problems well taken care of. As a result, production is orderly, the fulfillment of production plans is guaranteed, and there are special hours for roof breaking, consequently, greater safety.

b. The problem of coordinating labor with leisure can be more thoroughly solved.

c. It is easy to promote. The coal extraction shift overlaps coal extraction shift, and the types of work and working steps are fundamentally the same.

d. Coal production time is 20 hours. This is four hours more than the four-shift overlapping operation of "two shift coal extraction and two shift preparation."

This form of organization can be promoted in all the usual working faces. Its advantages are more pronounced and the results are particularly outstanding in inclined coal seams (25°-45°) where sliding chutes are used.

2. With regard to the second form of organization of two shift coal extraction: [two shift preparation, either two or four hours of overlap between coal extraction and preparation shifts, and a total overlap of eight hours a day as promoted by Feng-feng and Tzu-po administrations] it offers short distance roof control.

Consequently, ease of roof control and its results are most pronounced when used in the working faces of thin coal seams, and in working faces where the roof is not solid. It can be promoted in most types of working faces.

In this type of production organization, the coal extraction shifts do not overlap each other. Consequently, both the coal extraction shifts and the preparation shifts must complete the work of their own respective shifts according to specified time.

Otherwise, work of the following shift will be affected, creating a situation of not fully utilizing the workers' capabilities. The requirements of this type of production organization are, therefore, more strict. When a coal extraction shift or a preparation shift can not complete its tasks, suitable forms of mixed operation of coal extraction and preparation work must be studied. In this way mutual support may be carried out during the hours of overlapping operation, solving the problem of coordination between labor and leisure.

3. With regard to the third type of production organization of three shift coal production (22 hours of coal production and two hours of conveyer moving, checking and repairs) and an unfixed shift [hours indefinite] for the work of roof breaking as promoted by the Chiao-tso Mining Administration: coal production time is increased to 22 hours with great increase in output. However, the time of checking and repairs is short and the hours of roof breaking are indefinite. Its improvement should, therefore, be further studied.

In summary, our practice of the four-shift overlapping operation has had only a beginning. Certain problems are still awaiting study and solution. This can be done while the practice is being promoted in different places. Further improvement can also be initiated so that the operation may become more perfect. Moreover, in the actual process of its future promotion, the operation should be utilized and developed creatively by individual places on the basis of actual conditions of these places. On the foundation of continuously carrying but thoroughly the spirit of the Eighth Plenary Session of the Eighth Central Committee of the Party by China's coal mining staff and workers in "opposing rightist deviation and building up maximum efforts," and having gone through the Second Criticizing and Comparing National Conference of Coal Mine Large Area, High Production Red Banner Competition, a new high tide in the promotion of the four-shift overlapping form of production organization will certainly emerge.